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HYDROLOGIC BULLETIN No. 2

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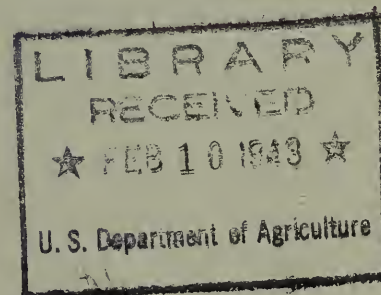
HYDROLOGIC DATA

BLACKLANDS EXPERIMENTAL WATERSHED
WACO, TEXAS

1937-1939

BY

HYDROLOGIC DIVISION
OFFICE OF RESEARCH
SOIL CONSERVATION SERVICE



UNITED STATES DEPARTMENT OF AGRICULTURE

WASHINGTON, D. C.

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UNITED STATES GOVERNMENT PRINTING OFFICE
WASHINGTON : 1942

Table	Page	Table	Page
55. Rainfall at station 2 for selected storms, 1939.....	167	73. Rainfall at station 84a for selected storms, 1939.....	185
56. Rainfall at station 5 for selected storms, 1937-39.....	168	74. Rainfall at station 85 for selected storms, 1937-39.....	185
57. Rainfall at station 14 for selected storms, 1937-39.....	169	75. Rainfall at station 89 for selected storms, 1939.....	186
58. Rainfall at station 27 for selected storms, 1937-39.....	171	76. Rainfall at station 94 for selected storms, 1937-39.....	187
59. Rainfall at station 31 for selected storms, 1937-39.....	172	77. Rainfall at station 107 for selected storms, 1937-39.....	188
60. Rainfall at station 44 for selected storms, 1937-39.....	174	78. Rainfall at station W-1 for selected storms, 1939.....	189
61. Rainfall at station 55 for selected storms, 1937-39.....	175	79. Rainfall at station W-1a for selected storms, 1939.....	190
62. Rainfall at station 56 for selected storms, 1939.....	176	80. Rainfall at station W-2 for selected storms, 1939.....	190
63. Rainfall at station 66 for selected storms, 1938-39.....	177	81. Rainfall at station W-2a for selected storms, 1939.....	191
64. Rainfall at station 69 for selected storms, 1937-39.....	178	82. Rainfall at station W-3 for selected storms, 1939.....	191
65. Rainfall at station 69a for selected storms, 1938-39.....	180	83. Rainfall at station W-3a for selected storms, 1939.....	192
66. Rainfall at station 70 for selected storms, 1938-39.....	180	84. Rainfall at station W-4 for selected storms, 1937-39.....	192
67. Rainfall at station 70a for selected storms, 1939.....	181	85. Rainfall at station W-4a for selected storms, 1938-39.....	194
68. Rainfall at station 75 for selected storms, 1939.....	182	86. Rainfall at station W-5 for selected storms, 1939.....	195
69. Rainfall at station 75a for selected storms, 1939.....	182	87. Rainfall at station W-6 for selected storms, 1939.....	195
70. Rainfall at station 76 for selected storms, 1939.....	183	88. Rainfall at station W-7 for selected storms, 1939.....	196
71. Rainfall at station 82 for selected storms, 1938-39.....	183	89. Rainfall at station W-9 for selected storms, 1939.....	196
72. Rainfall at station 83 for selected storms, 1939.....	184		

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HYDROLOGIC DATA: BLACKLANDS EXPERIMENTAL WATERSHED WACO, TEXAS, 1937-1939

By *Hydrologic Division, Office of Research, Soil Conservation Service*

INTRODUCTION

This publication is the first of a series of annual bulletins presenting basic hydrologic data collected at the Blacklands experimental watershed near Waco, Tex. This project is one of several similar projects in the United States at which the hydrologic and agricultural problems within the field of the Soil Conservation Service are being studied. Later publications, presenting analyzed data and the results of several studies will follow in this series.

The hydrologic data presented in this bulletin are being collected primarily to determine the effect of agricultural land use practices on the conservation of soil and water and on floods. These data are also needed for economically designing the erosion, flood-control, and hydraulic structures used in the general soil- and water-conservation program. Available data for these uses are extremely meager. Without such data it is impossible to make accurate estimates of the magnitude of the run-off which must be handled by the channels, spillways, check dams, culverts, stock ponds, and other hydraulic works in water-facilities and soil- and water-conservation operations. The lack of de-

pendable information on run-off often results in the complete failure of such works. Even more frequently perhaps, insufficient information leads to the use of unnecessarily high factors of safety in the design of structures and thus to unjustifiably high costs. These data will be useful not only to agencies of the Department of Agriculture but also to many other Federal agencies, States, municipalities, private companies, and individuals, in planning works and structures that depend for their safety and economy on a knowledge of run-off rates and amounts for which provision must be made.

In connection with this work, run-off measuring stations with attendant rain gages were established on areas ranging in size from $\frac{1}{4}$ -acre plots to natural watersheds of 5,860 acres. The watersheds and plots for which basic records are included in this bulletin, together with their areas, are listed below:

Mixed cover watershed:	Acres
J.....	5, 860
Y.....	309
W1.....	176
W2.....	130

ACKNOWLEDGMENTS.—The work on this experimental watershed project was done in cooperation with the Texas Agricultural Experiment Station, A. B. Conner, director, and E. B. Reynolds, chief, Division of Agronomy. Other cooperators under formal agreement are the United States Weather Bureau and the United States Bureau of Entomology and Plant Quarantine, Division of Cotton Insect Damage, R. W. Harned, in charge, and K. P. Ewing, entomologist. Valuable assistance was rendered by the United States Geological Survey; the Texas Board of Water Engineers; the College of Engineering, Division of Geology, and the Bureau of Economic Geology of the University of Texas; the Brazos River Conservation and Reclamation District; the Brazos River Soil Conservation Association; the highway departments of McLennan and Falls Counties, Tex.; the city of Temple, Tex.; the Department of Health, Waco, Tex.; the Chambers of Commerce of Waco, Marlin, Mart, Riesel, and Perry, Tex.; and by the several landowners in the experimental watershed.

The data in this bulletin were collected by the project staff of the Blacklands experimental watershed, under the direction of R. W. Baird, project supervisor, and assembled for publication by D. S. Jenkins, hydraulic engineer in charge of hydrologic investigations, assisted by Leonard Schiff, J. T. O'Brien, W. A. Cross, H. L. Champlin, J. C. Williams, C. W. Lauritzen, G. E. Byars, A. J. Stewart, Jr., H. R. Blank, and N. L. Stoltenberg. Assistance in collecting the records was given also by George Weber, Jr., H. Rockwood, O. F. Weymouth, A. J. Polos, H. H. Emmerich, S. D. McElroy, M. G. Santi, M. C. Bell, P. L. Edwards, and R. M. Latham, who were employed at this project. General direction for the collection and preparation of the data originated from H. R. Leach, H. L. Cook, and L. L. Harrold of the Washington office, Hydrologic Division, C. E. Ramser, chief.



FIGURE 1.—Location of watersheds and rain gages in Brushy Creek drainage basin.

Single crop watershed:

2	2. 70
3	3. 09
5	3. 09
6	3. 04
7	3. 15
11	3. 23
12	2. 97
13	3. 19
14	3. 02
16	3. 17
17	2. 99
18	3. 04

Plot:

1	243
2	243
3	243
4	243

DESCRIPTION OF THE PROJECT

An area known locally as Brushy Creek watershed, about 15 miles southeast of Waco, Tex., in the Brazos River Basin, was selected for the hydrologic studies. The area is typical of the Blacklands of Texas, which extend from San Antonio on the south northeastward to the Red River on the north (fig. 1). The Blacklands comprise some 11 million acres of very fertile soils, predominantly Houston soils and generally of heavy calcareous clay.

This part of Texas is within the belt of occasional intense rainfall. Rainfall has occurred at rates in excess of 10 inches in 24 hours, and in excess of half an inch in 5 minutes.

The relief is gently rolling. The slope of most of the watershed is between 2 and 3 percent. The drainage pattern of watersheds smaller than 40 acres is not well developed, but the streams of larger watersheds have well-defined channels with broad, flat flood plains that are frequently overflowed.

About 80 percent of the Brushy Creek watershed is in cultivation, and cotton is the principal crop. Before the agricultural adjustment program, about 70 percent of the cultivated land was devoted to the raising of cotton. Corn, oats, and sorghum are other prevalent crops.

PERIOD OF RECORD

The period covered is from the beginning of record to December 31, 1939, or to the conclusion of the records if they were discontinued before that date. Each measuring station was put in operation upon its completion. The beginning of records covers a period from September 1936, when the first rain gages were installed, to May 1939, when the last run-off station was put in operation. Detailed records of run-off for but 20 of the 35 watersheds in operation December 31, 1939, are published in this bulletin.

Blacklands Experimental Watershed

GENERAL CLIMATE DURING THE PERIOD OF RECORD

The total rainfall for the winter of 1936-37 was about normal. The monthly totals for October, December, January, and March, however, were excessive, and those for November and February were deficient. The storms were well distributed and generally of moderate intensity, providing ample moisture for all plant growth. Although they produced no excessive rates of run-off except on December 6 and March 13, there was sustained low flow in many of the streams most of the winter.

The rainfall for the spring and summer months in 1937 was deficient except that for June and September, which was about normal. Crops received sufficient moisture for normal yields. There was appreciable storm run-off on June 6-7 and September 6.

The winter of 1937-38 was one of excessive rainfall. Moisture was ample for all plant growth, and stock ponds and wells were at high levels. There were several periods of storm run-off at all stations then in operation. The maximum discharge for the period of record for most of the larger watersheds occurred January 23, 1938.

Except during April, when normal rainfall and appreciable surface run-off occurred, the spring and summer of 1938 were extremely deficient in rainfall, and drought conditions prevailed in the early fall. There was sufficient moisture in the soil from the previous winter for crops, and domestic water supplies were not threatened until August and September.

The drought of late summer continued throughout the fall of 1938, the total rainfall for the period August 1 to December 15, 1938, being less than 3 inches. From December 1938 to March 1939 rainfall was normal. Owing to the antecedent drought, there was only a small amount of surface run-off and by spring the soil moisture was still slightly deficient.

The rainfall was generally deficient throughout the spring and summer of 1939. Owing largely to the 5 inches of rain May 16-20, crops matured satisfactorily. There was appreciable surface run-off during May and at a few stations on June 19.

Drought conditions prevailed throughout the remainder of the year, and by the end of December 1939 the soil moisture was very low and wells and stock ponds were either nearly exhausted or entirely dry. The total rainfall for the last 6 months of 1939 was 8 inches and normal for that period is 15 inches.

The average rainfall for all stations on the Brushy Creek watershed for 1937 was 28.4 inches, or 81 percent of the normal for Waco; for 1938, 27.2 inches, or 78 percent of normal; and for 1939, 25.6 inches or 73 percent of normal. The normal rainfall (1889 to 1939) for Waco, Tex., is 34.9 inches.

UNITS AND DEFINITIONS

[All time referred to in this bulletin is central standard time.]

Drainage area, drainage basin, and watershed.—The area drained by a stream system above a designated point on the stream. In this bulletin these terms are used synonymously.

Shape factor.—The quotient obtained by dividing the area by the square of the length. It represents the ratio of the width of a watershed to its length.

PRECIPITATION

Amount.—The total rainfall in a given period expressed in inches depth. Snow and hail are expressed in inches depth of their water equivalent.

Intensity or rainfall rate.—The average rate at which the precipitation falls for a given time interval, generally expressed in inches per hour.

HUMIDITY

Relative humidity.—The amount of moisture present in the atmosphere expressed as a percent of the maximum amount of water vapor that the atmosphere could contain without condensation under the same conditions of temperature and pressure.

RUN-OFF

In this bulletin, rates of flow are expressed as discharge in second-feet (cubic feet per second) or run-off in inches per hour. Amounts of run-off are given in inches depth on the drainage area.

Second-feet.—The volume of water in cubic feet that passes a given section of a stream in 1 second. Second-feet and cubic feet per second are synonymous.

Inches per hour.—The depth, in inches, to which the amount of water passing a given section of a stream in a given time interval would cover the drainage area above that section if the water flowed at the same average rate for 1 hour.

Run-off in inches.—The depth in inches to which the drainage area would be covered if the amount of water

flowing from it in a given period were uniformly distributed on its surface.

LAND USE

Meadow.—Native grassland devoted to the production of hay.

Pasture.—Grassland devoted to the grazing of stock. The terms "meadow" and "pasture" as here defined and used in this report are in common use throughout the Texas Blacklands.

Bed.—The ridge raised between furrows opened with a double moldboard plow. The beds are 6 to 12 inches high; their width varies with the spacing of the furrows but is usually 36 inches.

Stooling.—The stage of development in plants of the grass family during which additional shoots are extended from the crown at the base of the stem.

Booting.—The stage of development in plants of the grass family that immediately precedes the appearance of the seed head, or of the tassel in corn.

Heading.—The stage of development in plants of the grass family when the seed stalk is making its appearance.

Tasseling.—The stage of development of the corn plant when the stamen is making its appearance.

Silking.—The stage of development of the corn plant when the silk, or pistils, are exposed. This occurs about the time the corn has reached its maximum height and vegetative density.

Earing.—The stage of development of the corn plant when the grain is forming.

Squaring.—The stage of development of the cotton plant when fruit buds are forming. During this stage some flowers and an occasional small boll may appear.

Bolling.—The stage of development of the cotton plant when bolls, or fruit, are forming. Squares and flowers may also be present.

FARMING PRACTICES

The principal crops grown are shown in tables 9 and 10 (pp. 61-62). The commonly used farm equipment consists of listers for bedding, moldboard and disk plows, cotton and corn planters, cultivators (usually equipped with sweeps), grain drills, and grain and row binders. The lister as used in this area leaves ridges about 8 inches high and 36 inches apart. These ridges are gradually lowered by weathering and are almost eliminated during planting, the crop generally being planted on the top of the ridge. Most of the equipment used is horse-drawn, but some is one- or two-row tractor

equipment. Preparation of land for the next year's crop is commonly done in the fall. New tenants, however, are unable to do any seedbed preparation until after they move to the farm, about January 1.

Cotton may follow any of the crops grown in this section, most commonly it follows corn, oats, sorghum, or cotton. Preparation of the land for cotton is usually started soon after the previous crop is harvested. Weed growth is controlled by rebedding until about March 1. The cotton is planted in 36-inch rows April 1 to May 15. When the plants are from 2 to 4 inches high, they are

thinned out leaving one plant every 6 to 8 inches. The cottonfields are then cultivated as frequently as necessary to control weeds until about August 15, sometimes as often as eight times per season. The first cotton is usually picked about August 1 and the last of the crop in October.

Oats are usually planted following a crop of cotton, being drilled in 7-inch rows. If they follow cotton, usually no seedbed preparation is attempted; the oats are drilled among the cotton stalks as soon as the cotton crop is harvested. Fall oats are planted in October. Since fall-planted oats are sometimes severely damaged by extreme cold weather, some spring oats are planted, normally about February 1. Oats make considerable fall and early winter growth, give the land some protection during the winter months, and start a heavy draft on soil moisture early in the spring. Harvesting is started about the first of June, and the land is plowed or bedded after harvesting when moisture conditions are favorable.

Corn usually follows cotton but may follow oats. It is usually planted in 36-inch rows and thinned to a spacing of about 36 inches in the row. Some farmers leave every third row idle or plant it later to cowpeas. In this case the corn plants are left with closer spacings. Where corn follows cotton, bedding of the land is started about October 15 and is completed by January 15. Most fields to be planted to corn are rebudded several weeks before planting. Planting is started as soon as possible after March 1. Generally corn crops are best when planted relatively early so that the heavy draft of the corn plant on soil moisture occurs before the extreme hot weather of the summer. Corn usually makes rapid growth and is too large for further cultivation by June. By the middle of August the corn

is mature and can be harvested. Most of the corn is picked, very little is cut for forage. During the period between the last cultivation and the harvest, a heavy growth of grass and weeds give considerable protection against erosion.

The most common sorghums are hegari, sorgo, and Sudan grass. Any of these crops may be either drilled with an ordinary grain drill or planted in rows and cultivated like cotton or corn. The date of planting depends on the use to be made of the crop. Sorghum for forage is usually cut by July 15 and may make considerable second growth before being turned under. Stalks of hegari and other sorghums that are harvested for the grain only are pastured later during the season. Even though Sudan grass is generally used as supplemental pasture, it is frequently planted in rows and cultivated. Soon after September 1 the land is plowed or bedded preparatory for the succeeding crop.

Pastures are predominately Bermuda grass although much buffalo grass is present in upland meadow that has been grazed for a number of years. Much of the pasture is along drainage channels subject to overflow and may have considerable brush and weeds. Mowing of pastures at least once a season is recommended as a means of controlling weed growth and mesquite sprouts. Pastures have a fairly good carrying capacity during spring and early summer and occasionally longer when moisture conditions make continued growth possible. As the establishment of pasture grasses is difficult, these areas are left in pasture for a long period.

Small areas of native meadow harvested for hay remain in this area. Little bluestem (*Andropogon scoparius*) is the dominant grass in most meadows. Meadows are usually cut once during the season, about July 1, and are protected from grazing.

INSTRUMENTATION AND METHODOLOGY

PRECIPITATION

At the end of December 1939, there were 35 rainfall stations recording rainfall intensities and amounts and 78 additional stations where records of daily rainfall amounts were being maintained. The location of these rainfall stations is shown on figures 1 and 2.

MEASURING DEVICES

Rainfall amount is measured in Weather Bureau 8-inch standard rain gages that are exposed in accordance with specifications of the Hydrologic Division (pl. 1, A). Each gage is mounted on a concrete pedestal in the center of a barbed-wire enclosure 8 feet square. The standard gages are read once daily by local, paid observers at 6 p. m. during the winter months, from October to March, and at 7:30 p. m. during the sum-

mer months. More frequent readings are occasionally made during periods of intermittent rainfall.

Rainfall intensity is measured in Fergusson weighing and recording rain gages of 9-inch capacity operating on chart scales of 1 inch equals approximately 30 minutes and of 1 inch equals $\frac{3}{4}$ -inch rainfall. At each of the recording gages there is, in addition, a standard gage which can be used to check the total amount of rain caught by the recording gage. These 2 gages are set in a barbed-wire enclosure 8 feet wide by 12 feet long. The 11 recording gages located on private land are attended by local, paid observers. The 24 gages located on Government land are attended by the project personnel.

Snowfall is measured in the Fergusson weighing and recording rain gages, which have ample capacity for

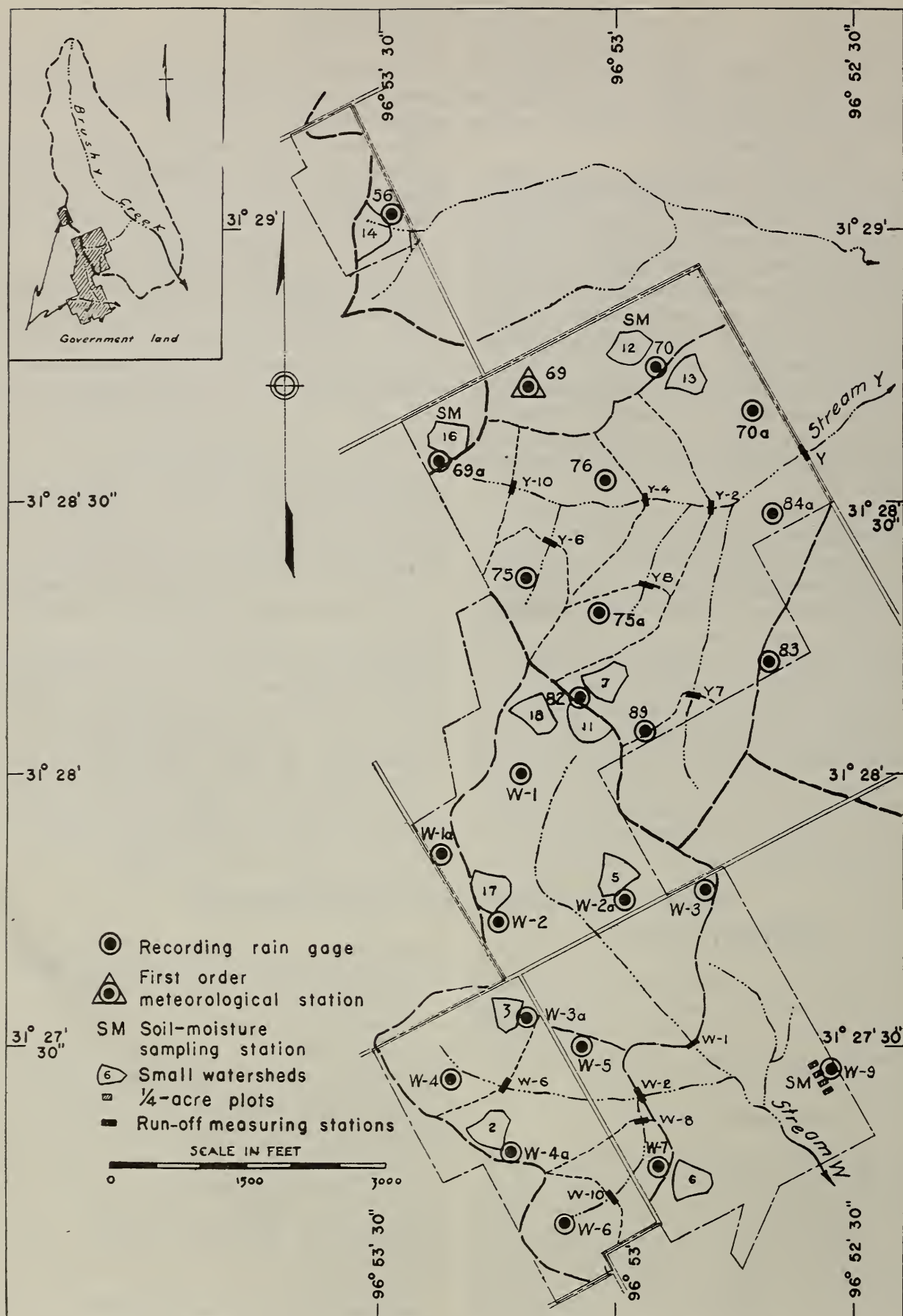


FIGURE 2.—Location of watersheds, rain gages, and soil-moisture sampling stations on Government land.



A, The recording rain gage and the nonrecording Weather Bureau standard rain gage at station 82. *B*, Looking downstream at the current-meter station J. The footbridge is used in taking high-water measurements. The recorder shelters at the right are used to determine the slope downstream from the measuring station.



A, Looking upstream at the Ramser silt sampler and H flume in watershed 3; B, looking upstream at Columbus weir current-meter run-off measuring station C; C, looking upstream at the 15-foot Parshall flume and 1-on-5 Columbus weir at watershed Y2.

this region where snowfall is unusual and generally light.

Intensity records from individual gages are computed for each regular clock 5-minute, 10-minute, 15-minute, 30-minute, or 1-hour interval, or multiples thereof, during which rain fell at uniform intensity. In addition, the individual intensities are computed for 1-, 2-, 3-, or 4-minute periods when rainfall during the regular intervals was not of uniform intensity.

The computations necessary for the various tabulations of basic data are described in the explanation of or in footnotes to the tables.

ACCURACY OF RECORDS

Owing to the relatively level relief and scarcity of trees and buildings, the exposure of each gage is good. During high winds the rainfall caught in the gage may be in error. Many of the earliest records were of low accuracy while the local observers were being trained. Records of rainfall intensity and depth are considered fair for 1936, good for 1937, and excellent thereafter.

RUN-OFF.

At the end of December 1939, records of run-off rates and amounts were being maintained for 35 watersheds. The watershed boundaries and the location of the run-off measuring stations are shown in figures 1 and 2.

MEASURING DEVICES

Two types of run-off measuring stations are in operation: (1) Those having flow-measuring devices that have been previously calibrated, and (2) those requiring field calibration by means of current-meter measurements of discharge.

The H flume was designed by the Soil Conservation Service for flows up to 30 second-feet. It consists of converging vertical side walls cut back on a slope at the outlet so as to give a trapezoidal projection (pl. 2, *A*).

For measuring the run-off from watersheds ranging in size from 20 to 200 acres, a flume weir that is a combination of the Parshall flume and Columbus-type ogee weir is used (pl. 2, *C*). This combination flume consists of a Parshall flume of standard design except that the sloping floor downstream from the throat has been replaced by a horizontal approach to a Columbus weir located at the downstream end of the flume. Two stage recorders are used, one measuring the head on the Parshall flume used for the higher flows, the other recording the head on the sensitive weir used for low flows. Flume weirs having throat widths of 6 feet, 10 feet, and 15 feet are in operation, the size depending largely on the area of the watershed.

Both the H flumes and the flume weirs were calibrated

by the Soil Conservation Service using facilities furnished by the National Hydraulic Laboratory at Washington, D. C., and were constructed in the field with all conditions as nearly identical as possible with those under which they were rated.

For watersheds larger than 200 acres the Columbus weir or a broad-crested V-notch weir is used to stabilize the relation between stage and discharge for low flows, and the channel banks, which have been well-sodded, serve as the control for medium and high flows (pl. 2, *B*). Each of these stations is rated by current-meter measurements made according to the United States Geological Survey standards. Where the channel gradients are so flat that a constant relation between stage and discharge does not exist, two stage recorders are used to measure the slope of the water surface through a reach of the stream (pl. 1, *B*). These "slope" stations are also calibrated in the field by current-meter measurements of discharge.

Type FW-1 water-stage recorders operating on chart scales of 1 inch equals 25 minutes and 1 inch equals 0.20 foot-stage are used at all run-off measuring stations.

METHODS OF COMPUTATION

The records of stage are first corrected for improper time and errors in gage heights due to ordinary errors such as datum shifts, intake stoppage, paper expansion and contraction, improper settings, and instrument irregularities, all of which, except datum shifts, are thoroughly noted at each station by routine inspections twice weekly or oftener. The elevation of all flumes, weirs, and recorders are checked by levels semiannually or oftener. The corrected gage heights are transferred from the recorder charts to computation tables on which is tabulated the time and stage for (1) each clock 5-, 10-, or 15-minute period during rainfall, (2) each change in the direction of the stage graph, (3) each additional point necessary to define the hydrograph and to compute the run-off amounts within allowable limits of error.

Rating tables showing the discharge in second-feet and inches per hour for all stages are prepared for all stations except the slope stations G and J. These tables are derived either from the laboratory calibrations or from rating curves developed from current-meter measurements. These stage-discharge tables are applied to the tabulated gage heights, and the individual values of discharge for each listed time are tabulated.

For the slope stations the roughness coefficients are computed from current-meter measurements. By use of the Manning formula these coefficients and the recorded slope and known area and hydraulic radii are used to compute the discharge for each tabulated time. If sufficient discharge measurements have been obtained

to define the stage-discharge relation throughout an entire flood period, it is not necessary to use the slope for computing that record. Of the records appearing in this bulletin, only those for May 18 and 20, 1939, for station J have been computed by this slope method.

The discharge for each tabulated time is averaged with that for the preceding time, and this average discharge for the time interval is converted to run-off amount in inches for the interval. The run-off amounts for each time interval are then accumulated.

ACCURACY OF RECORDS

The records from the H flumes and the low-water records from the flume weirs are probably of high accuracy. Those records from the Parshall flumes are of fair accuracy except as the ratings may be affected by depositions of debris on flume floor and approach. As the stations are inspected and cleaned frequently during run-off periods, and the depositions measured shortly thereafter, data are obtained to apply corrections for the receding flows. Debris has less effect in the H flumes and still less in the weirs of the flume-weir stations. As the inlet openings of all gage wells are subject to stoppage by silt, some of the receding flows are slightly in error, but because of the frequent inspections these errors have been minimized. The accuracy of records from the current-meter stations is described in connection with the summary of flow from each watershed.

GROUND WATER

Records of water level in numerous wells are obtained by periodic observations or by stage recorders. Figures 3 and 4 show the location of these wells.

EROSION

The soil transported in streams draining watersheds of 20 acres and larger is determined at 11 stations by periodic sampling of the run-off water, and that leaving the 3-acre watersheds and plots (excepting station 14

for which there is no record) is measured by silt boxes and Ramser silt samplers (pl. 2, A).

SOIL MOISTURE

The soil moisture (percent of dry-soil weight) that is being determined at the four $\frac{1}{4}$ -acre plots and at watersheds 12 and 16 is measured by semimonthly sampling with soil augers or King soil-sampling tubes, depending on the moisture content. Samples are obtained at depths of 0 to 6 inches, 6 to 12 inches, 12 to 14 inches, 24 to 36 inches, 36 to 48 inches, and 48 to 60 inches. The location of the sampling points in each area is determined for each sampling date by randomization. The volume weights of the soil are also determined, from which the soil moisture (percent of dry-soil weight) can be computed as a volume.

COVER AND CULTIVATION

A survey of land cover and conditions over the whole project is made semimonthly. Additional inspections are made on all small watersheds after each run-off period. This affords a record of the stage of development of each crop, cultural operations, and the general moisture condition of each type of soil. The dates of important changes in cover and of culture operations that might have bearing on the hydrologic conditions are noted along with the tables of rainfall and run-off summaries. The location of the cultivated areas and the pasture-meadow land is shown on figures 5, 6, and 7.

OTHER METEOROLOGICAL RECORDS

Records of temperature, humidity, evaporation, air pressure, wind movement, and sunshine duration are being obtained at the central meteorological station, station 69 on figure 3. Records of relative humidity and dew point are obtained from wet- and dry-bulb thermometers. Evaporation is measured from the United States Weather Bureau class A pan, the Colorado pan, and the Bureau of Plant Industry pan. Records of barometric pressure are obtained from a recording barograph and a mercurial barometer.

GRAPHIC DATA

The areal distribution of rainfall for six selected storms is shown by isohyetal lines in figures 8-13.

The fluctuation of the water level in two selected wells is shown in figures 14-16.

Rainfall and run-off for 17 watersheds for selected storms are shown on figures 17-44. The rainfall rates and amounts on these graphs are those measured at one selected gage.

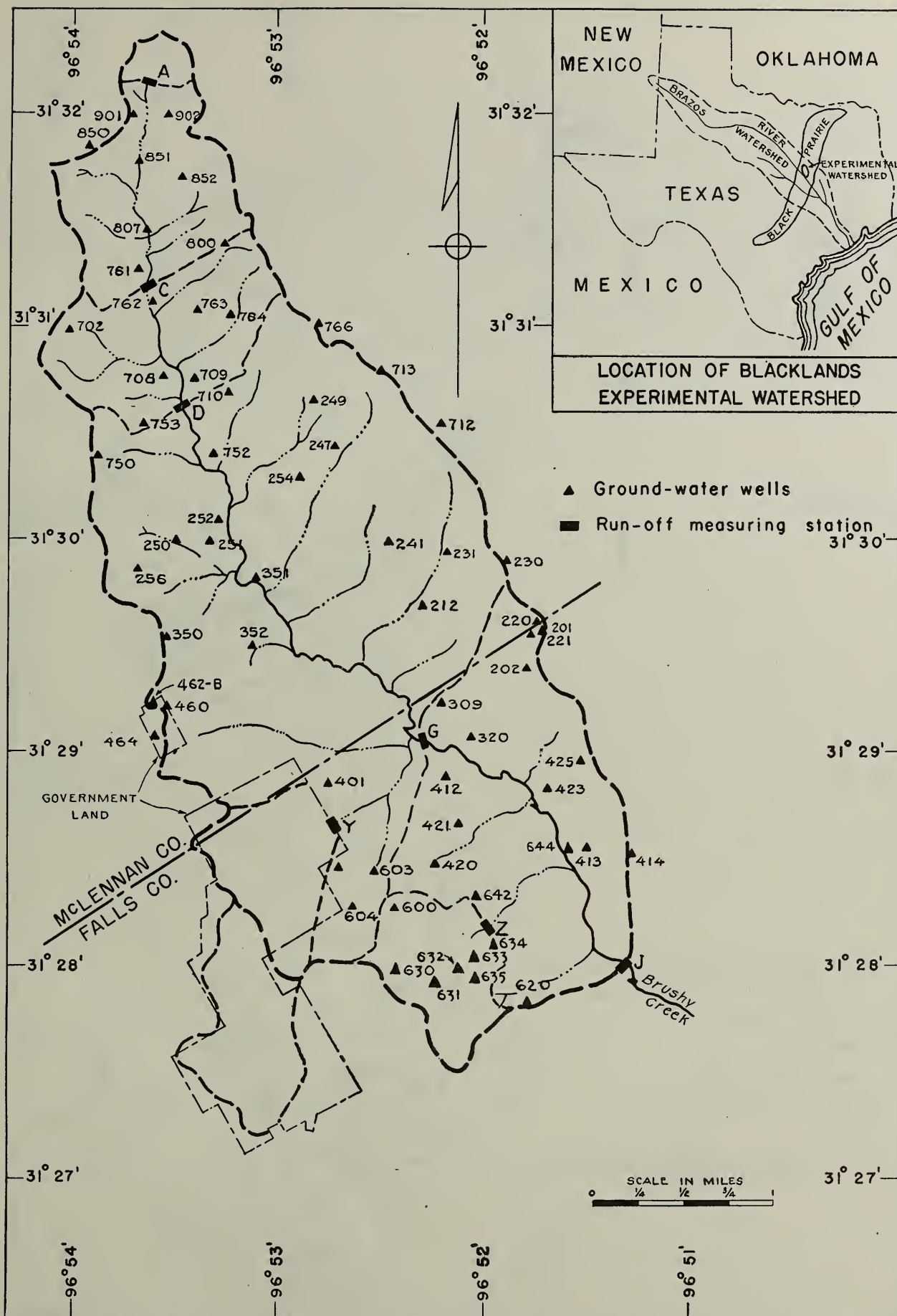


FIGURE 3.—Location of run-off measuring stations and ground-water wells in Brushy Creek drainage basin.

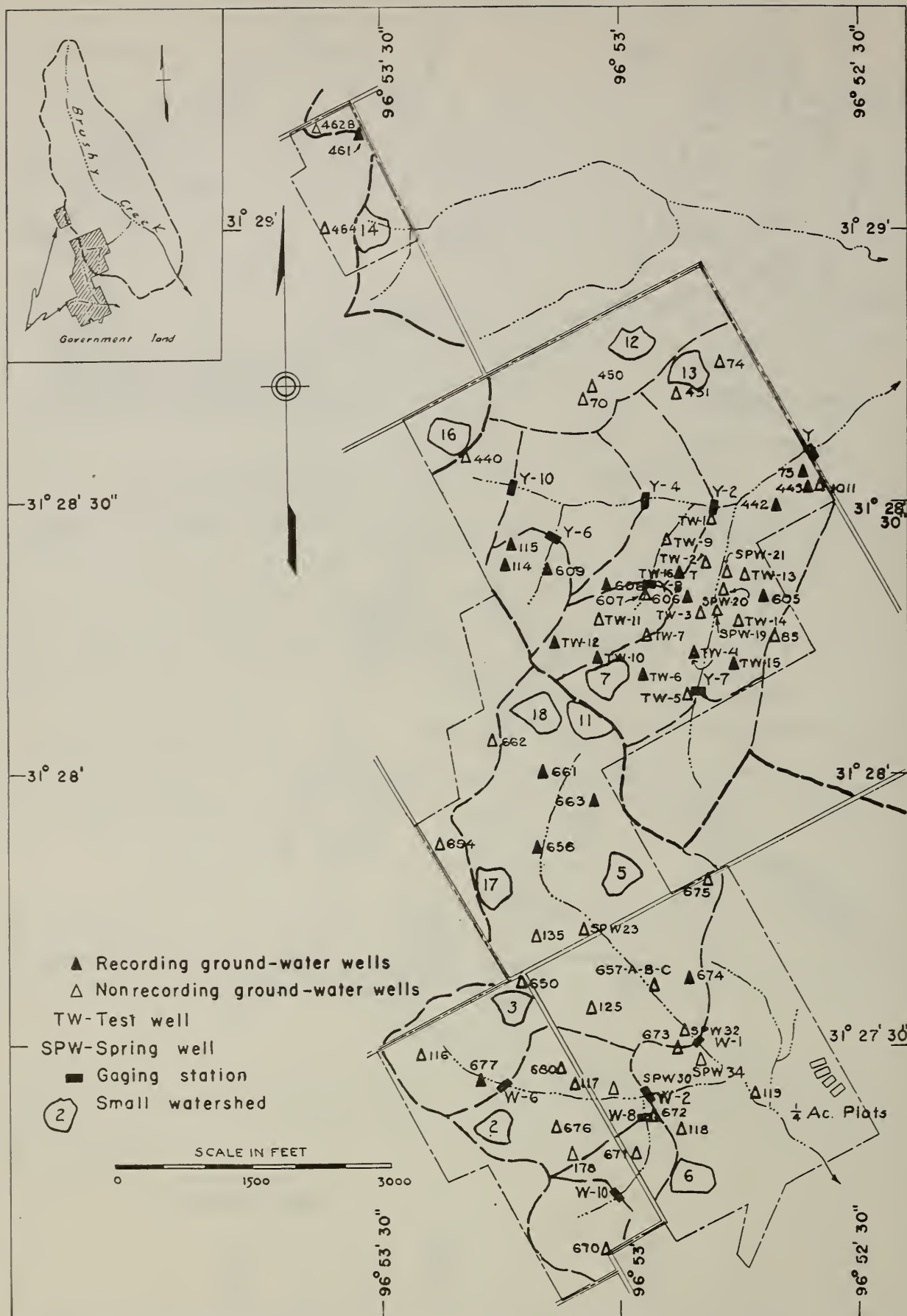


FIGURE 4.—Location of watersheds and ground-water wells on Government land.

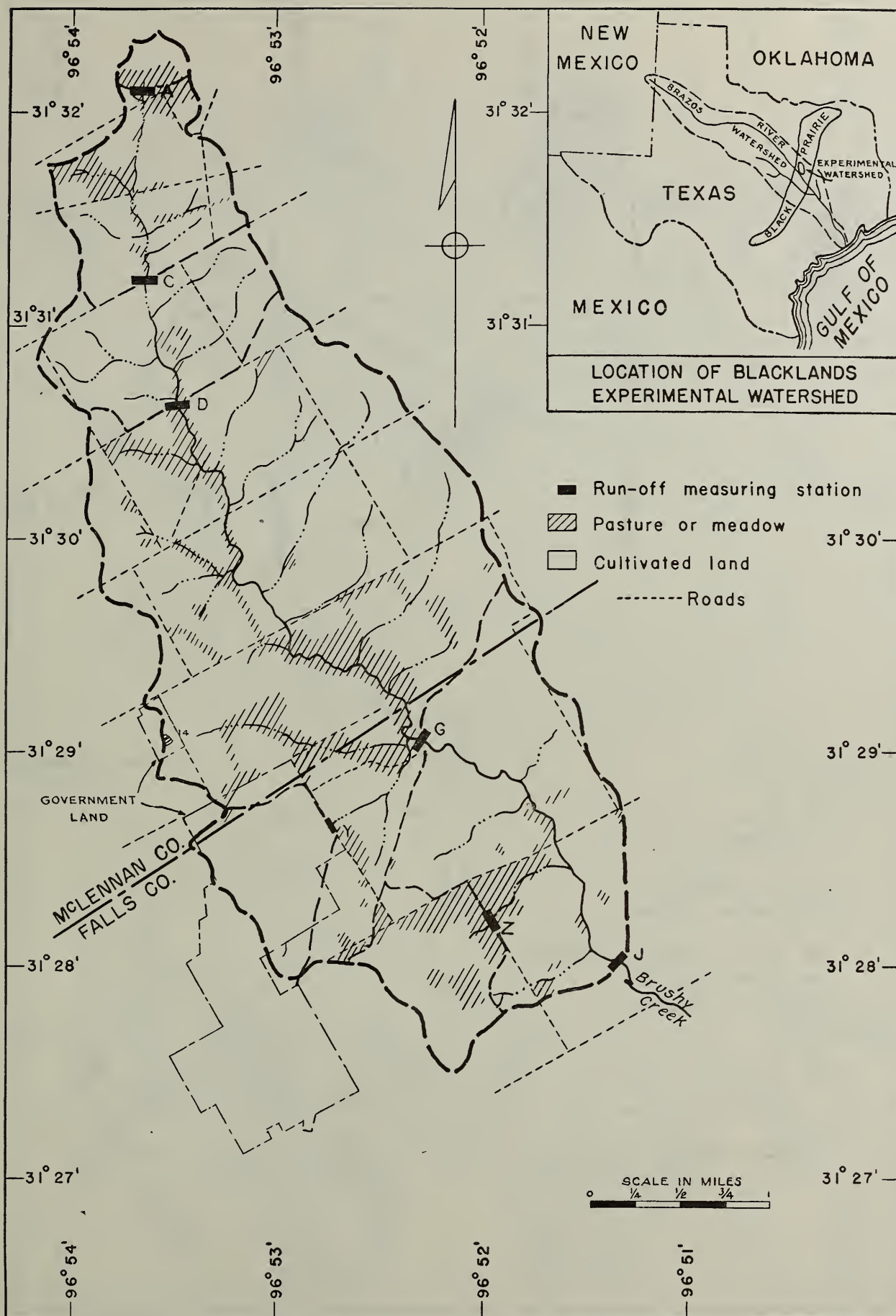


FIGURE 5.—Location of cultivated areas, pasture-meadow land, and run-off stations in Brushy Creek drainage basin.

Blacklands Experimental Watershed

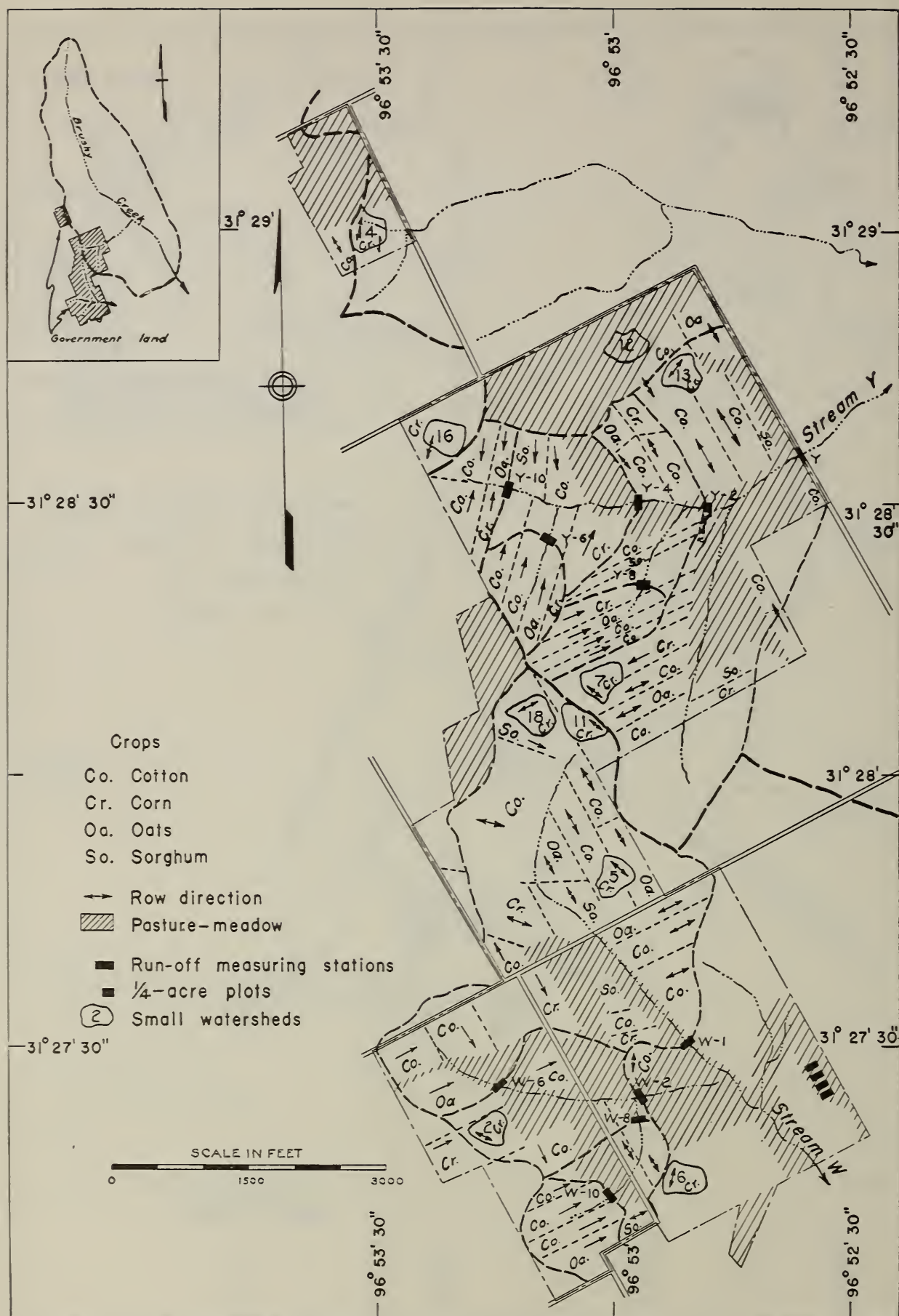


FIGURE 6.—Land use and crops on Government land, 1938.

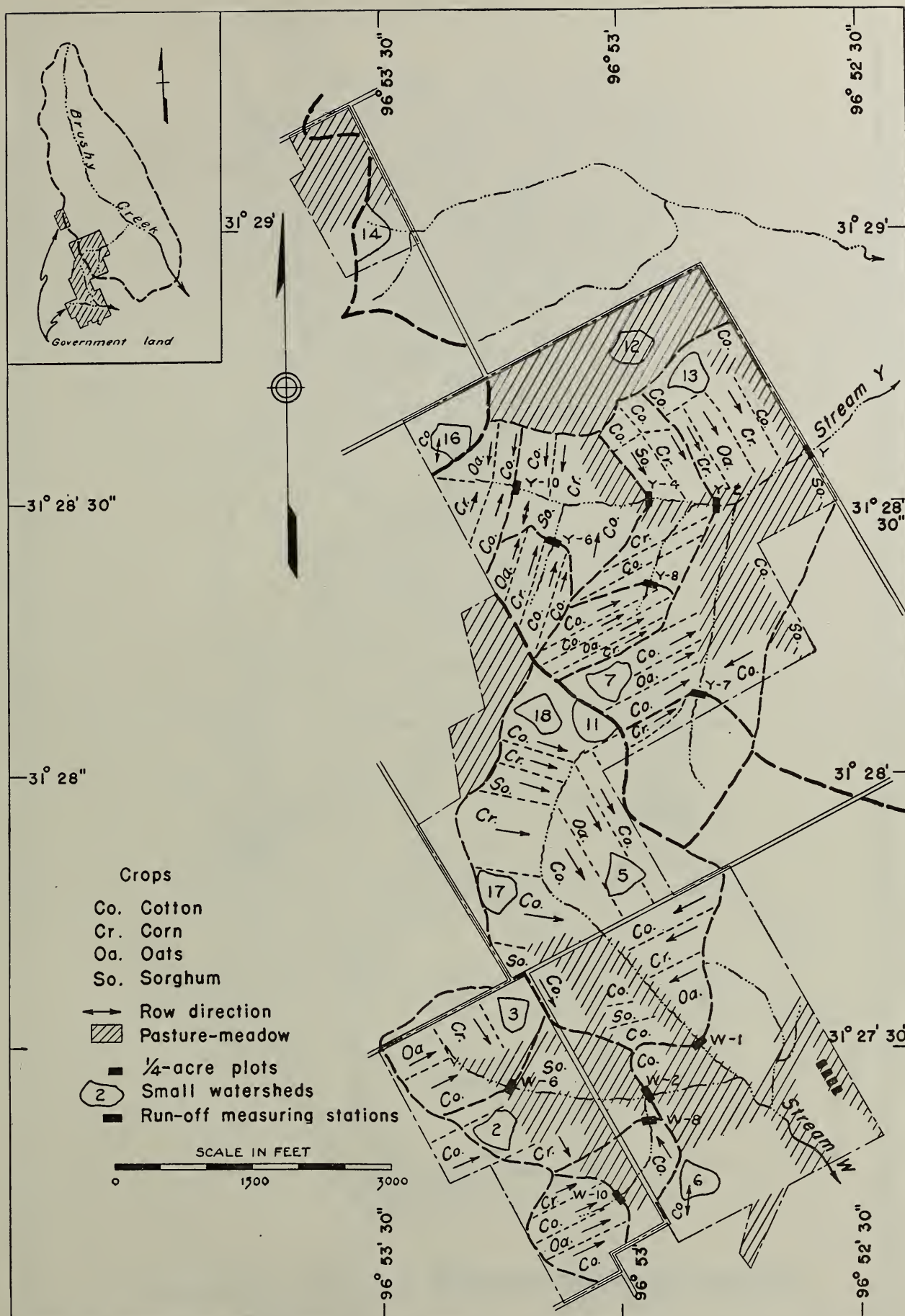


FIGURE 7.—Land use and crops on Government land, 1939.

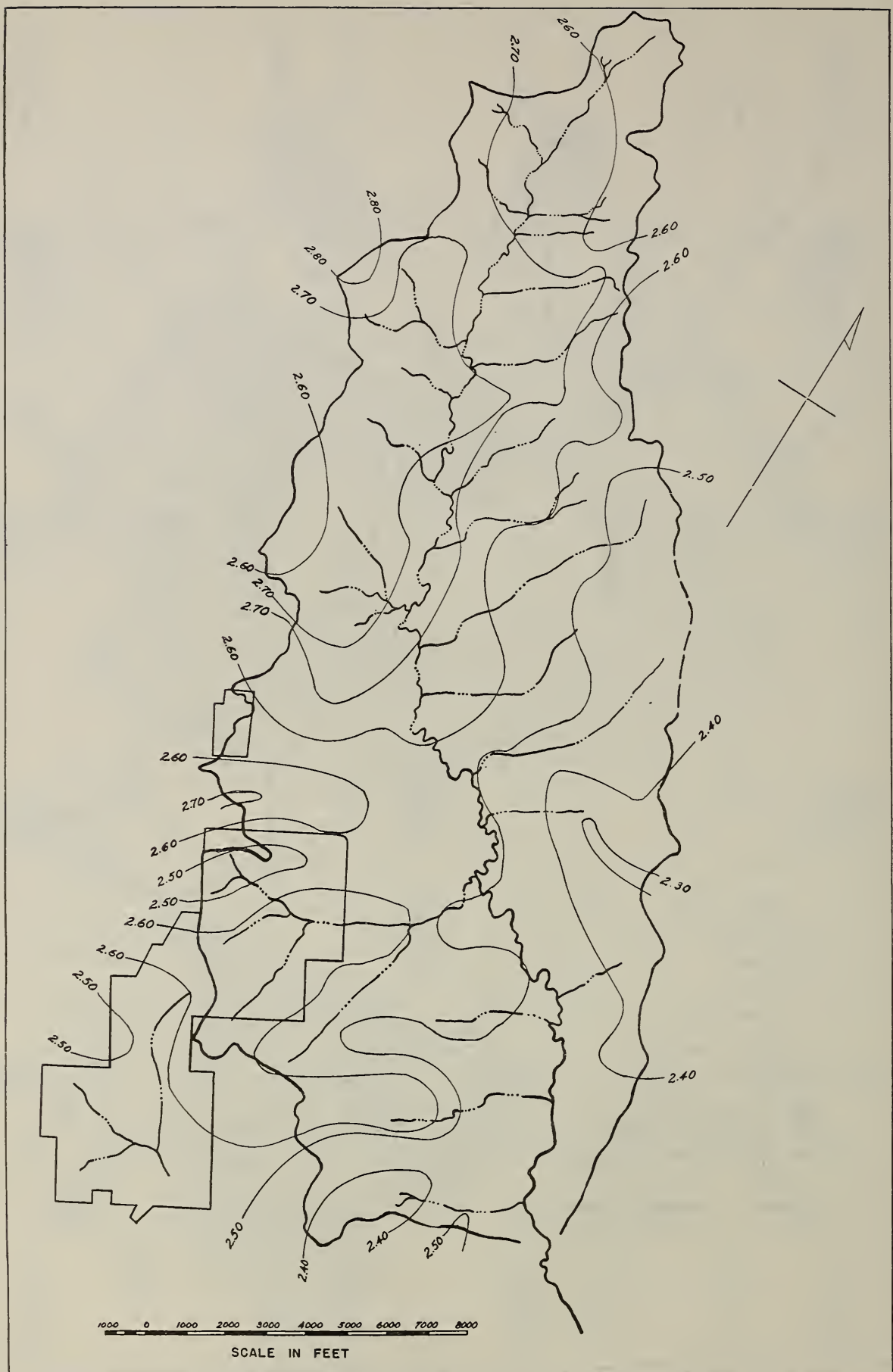


FIGURE 8.—Isohyetal map of Brushy Creek drainage basin, storm of January 23, 1938.

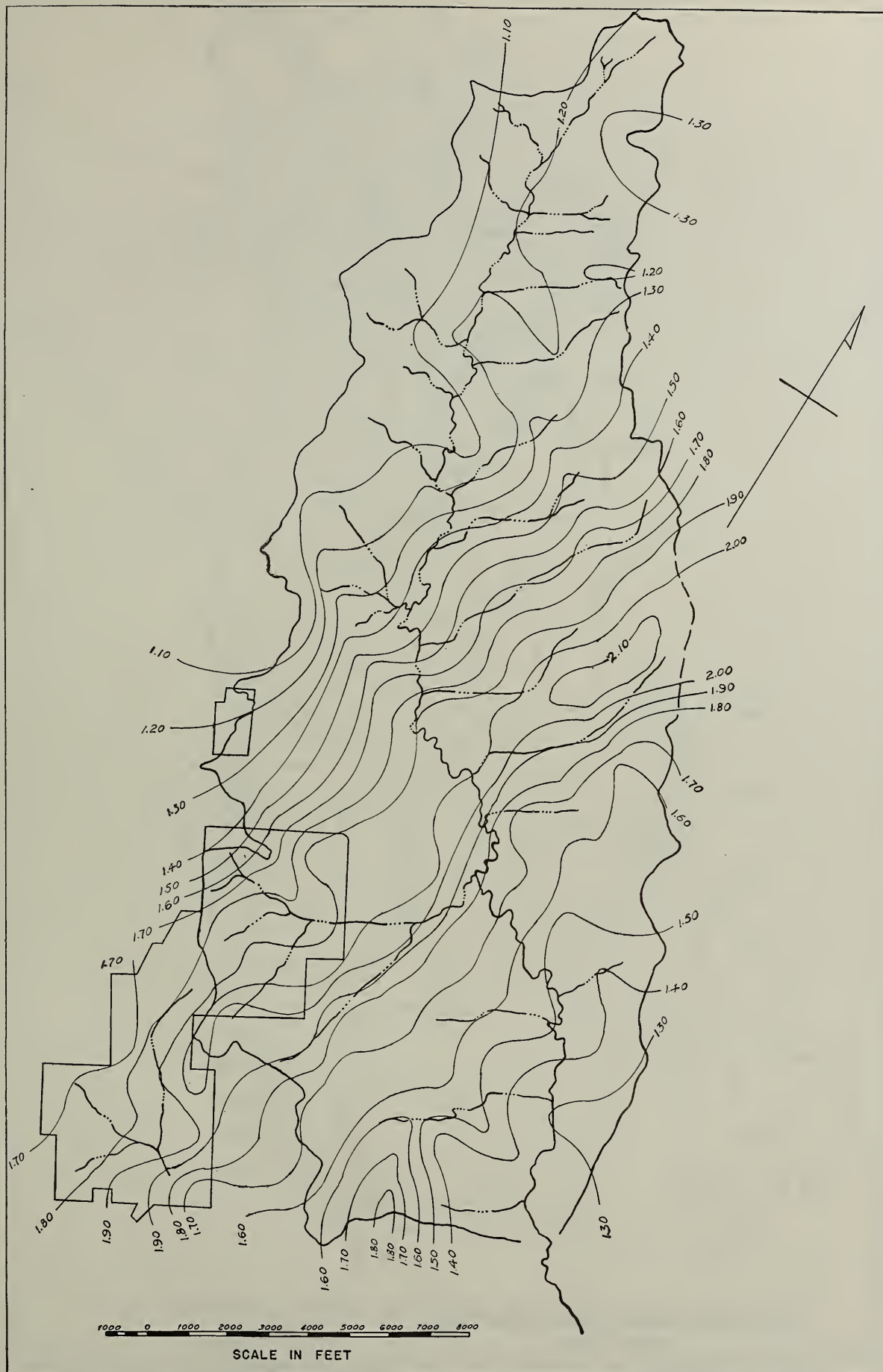


FIGURE 9.—Isohyetal map of Brushy Creek drainage basin, storm of February 16, 1938.

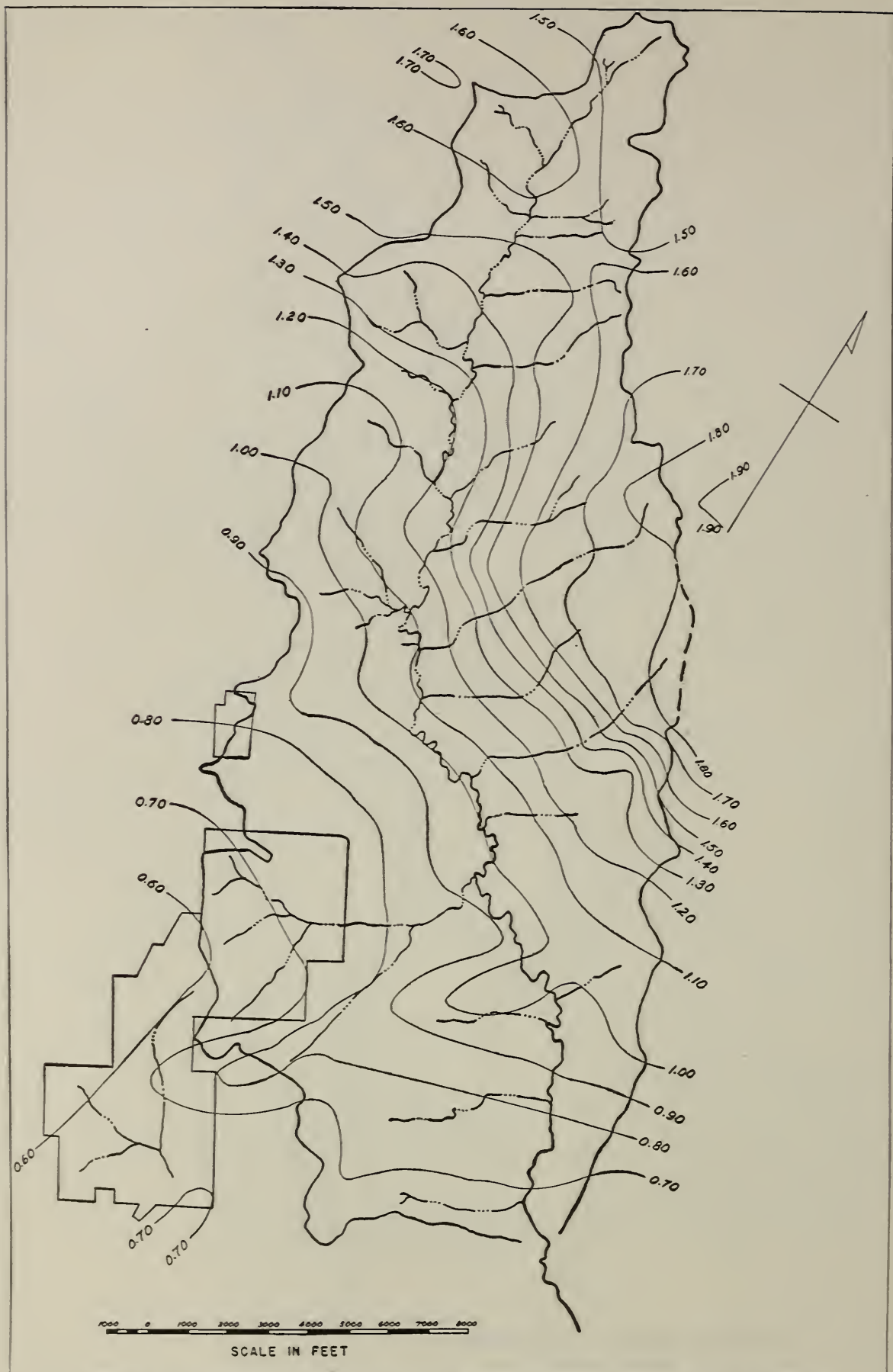


FIGURE 10.—Isohyetal map of Brushy Creek drainage basin, storm of March 27, 1938.

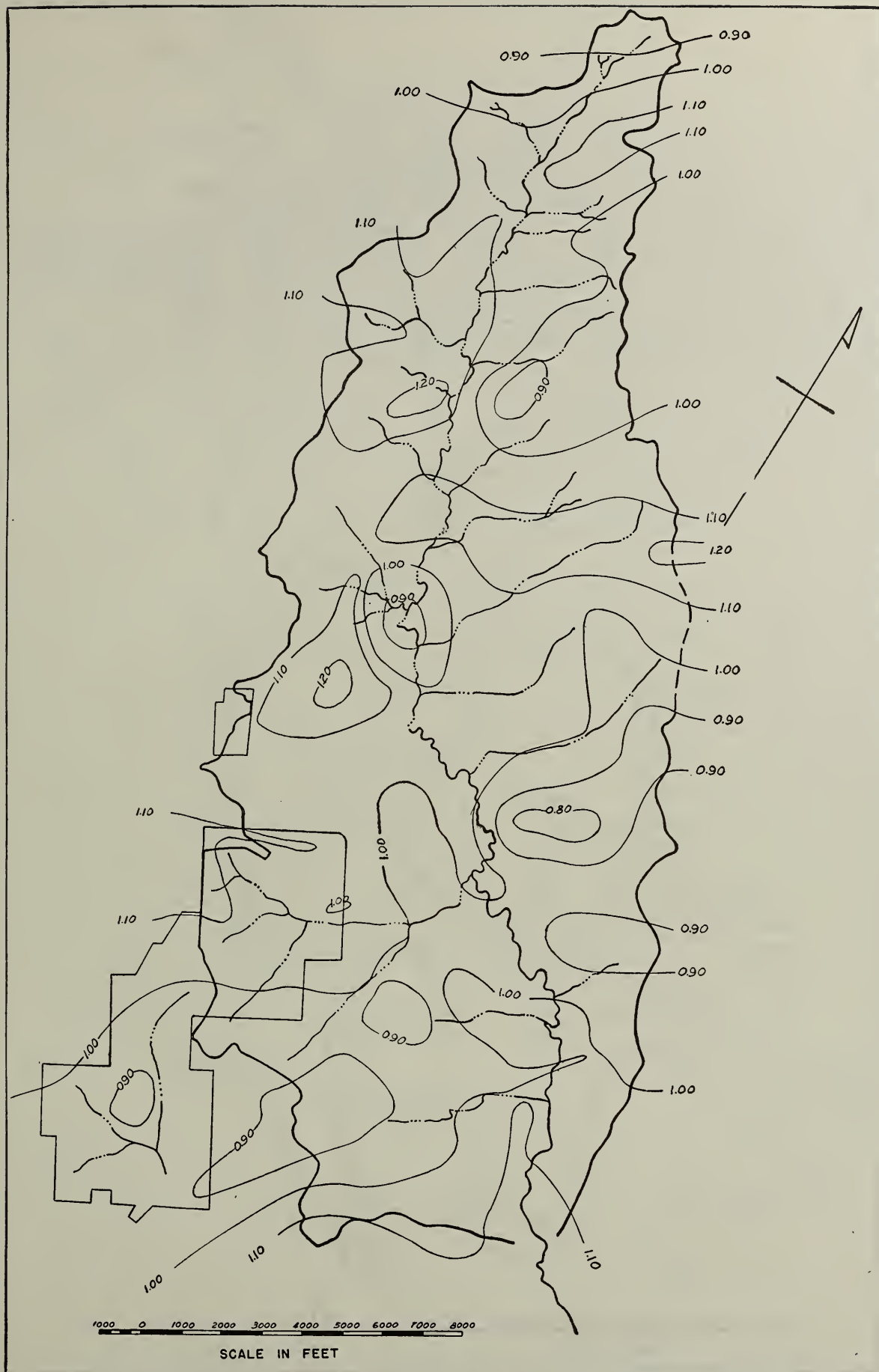


FIGURE 11.—Isohyetal map of Brushy Creek drainage basin, storm of March 28, 1938.

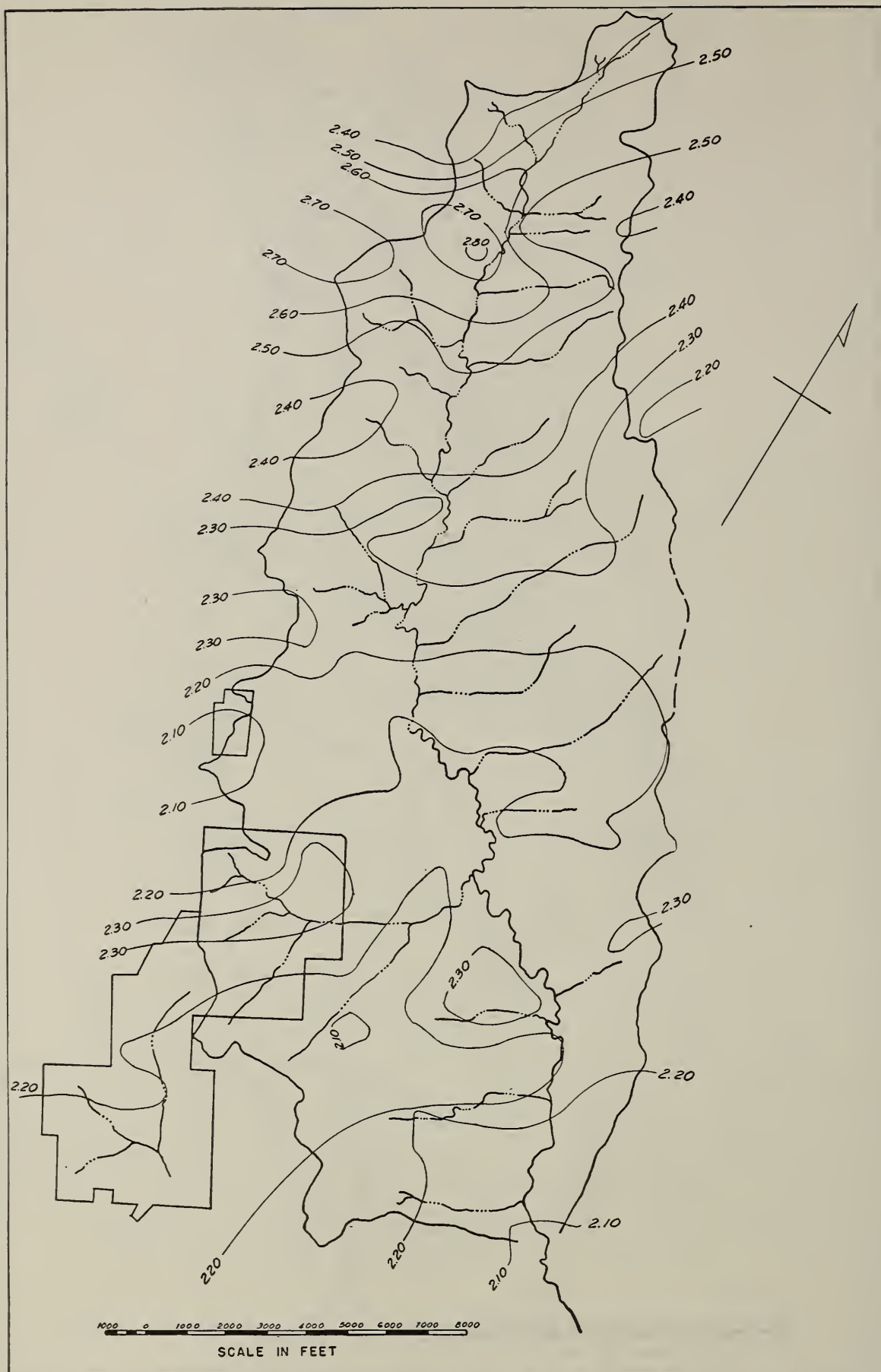


FIGURE 12.—Isohyetal map of Brushy Creek drainage basin, storm of April 14-15, 1938.

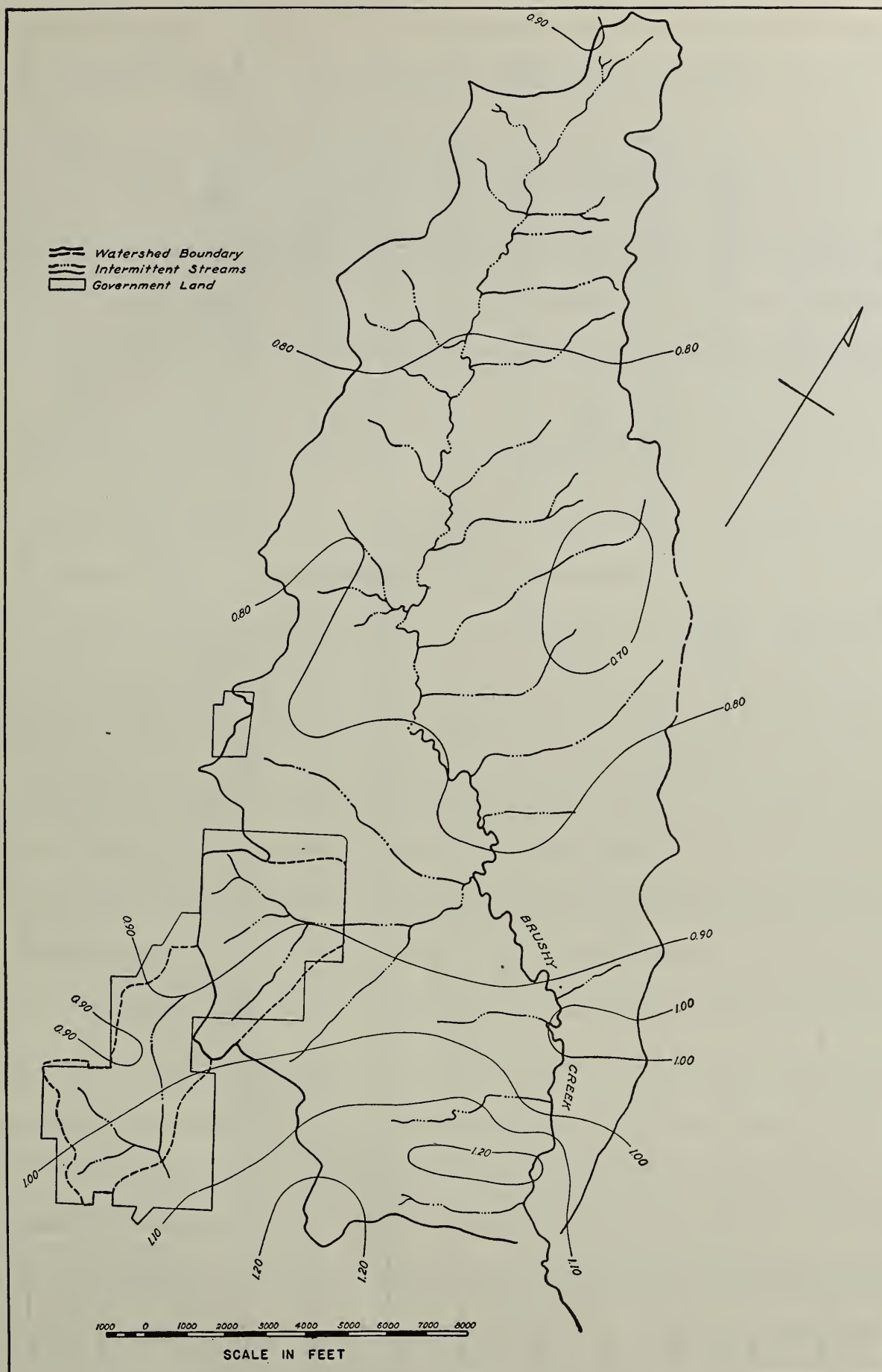


FIGURE 13.—Isohyetal map of Brushy Creek drainage basin, storm of May 20, 1939.

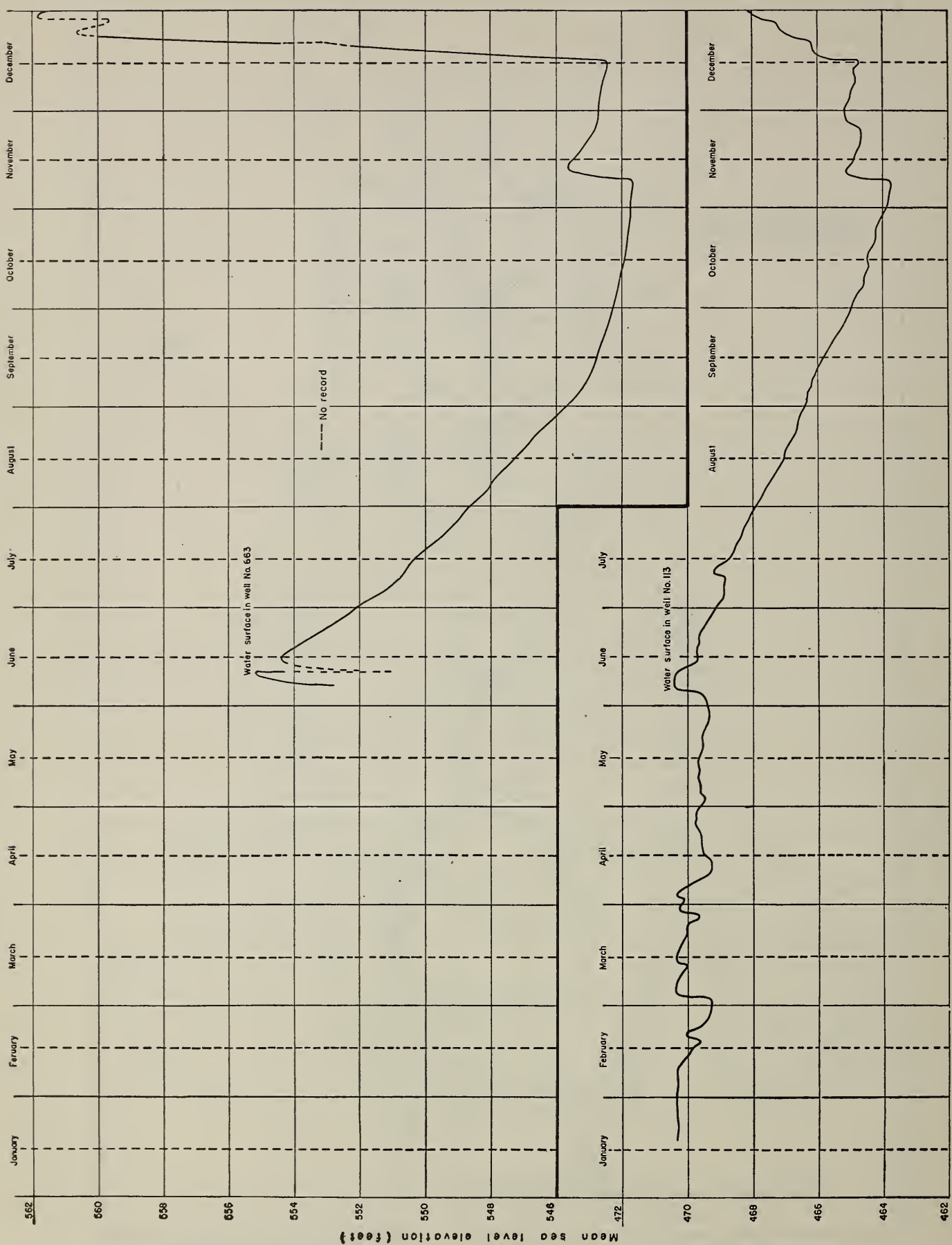


FIGURE 14.—Water level in wells 113 and 663, 1937. Regular measurements were begun January 18 in well 113 and June 7 in well 663. Well 663 was cased June 11. The graphs are plotted from manual measurements made at intervals of 1 to 5 days. A description of the wells is given on figure 16.

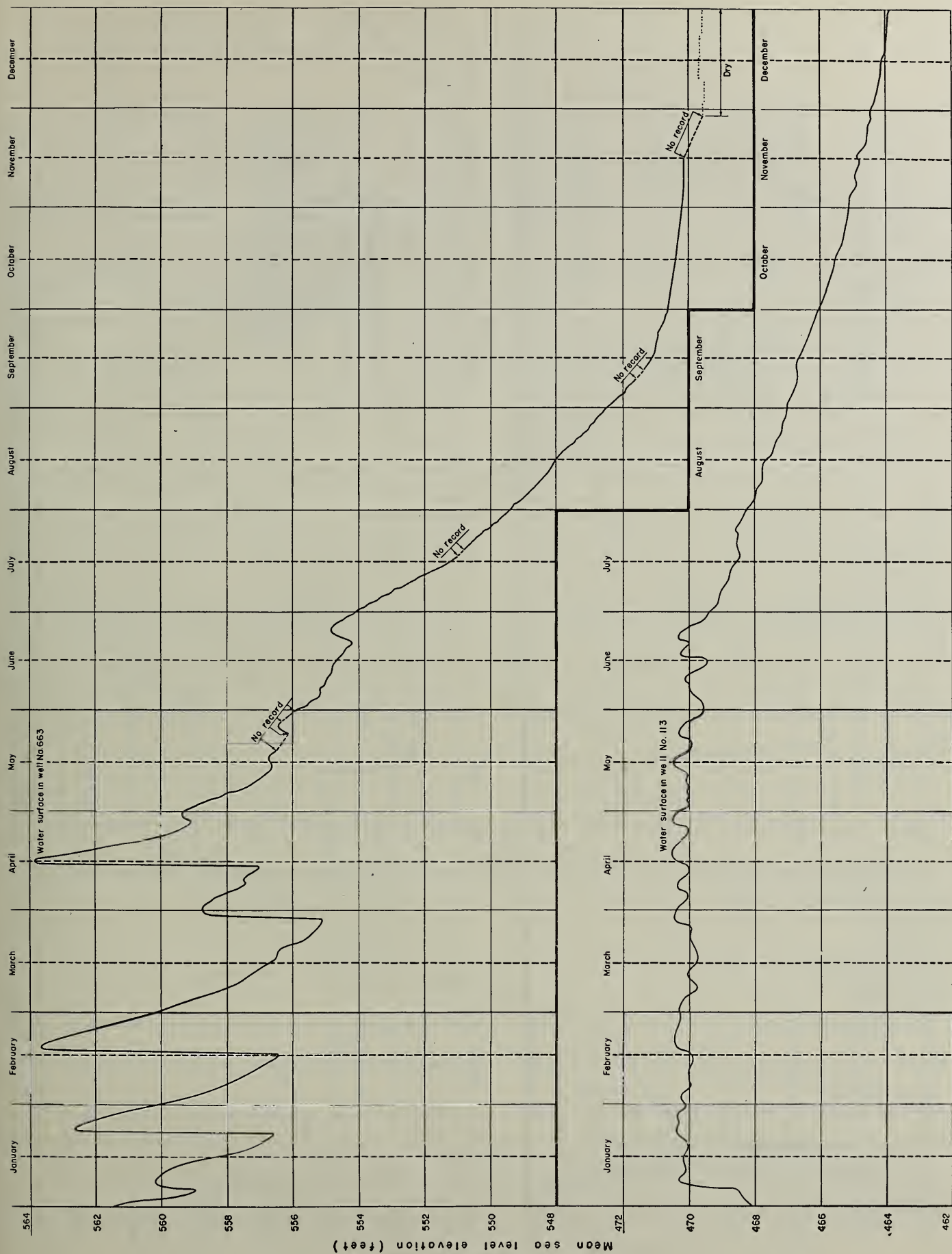


FIGURE 15.—Water level in wells 113 and 663, 1938. The graphs for well 113 and that for well 663 up to April 9 are plotted from manual measurements made at intervals of 1 to 5 days. On April 9 a recorder was installed in well 663 and thereafter its graph is plotted from daily noon readings shown by the recorder, plus all peaks and troughs. A description of the wells is given on figure 16.

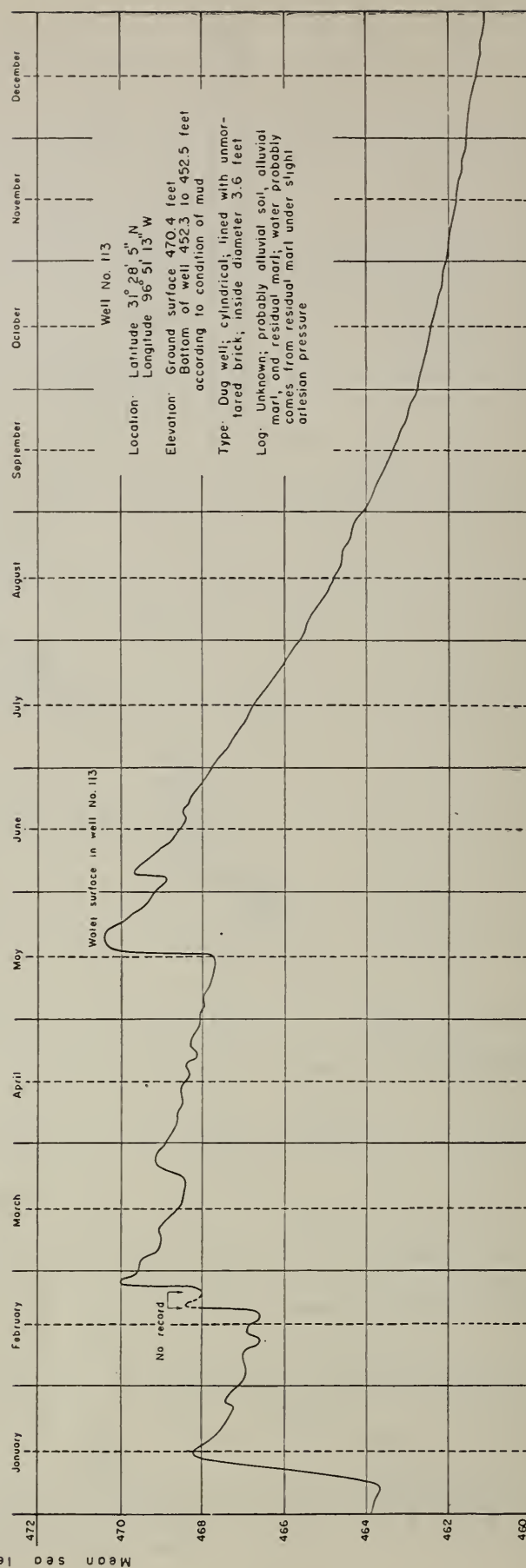
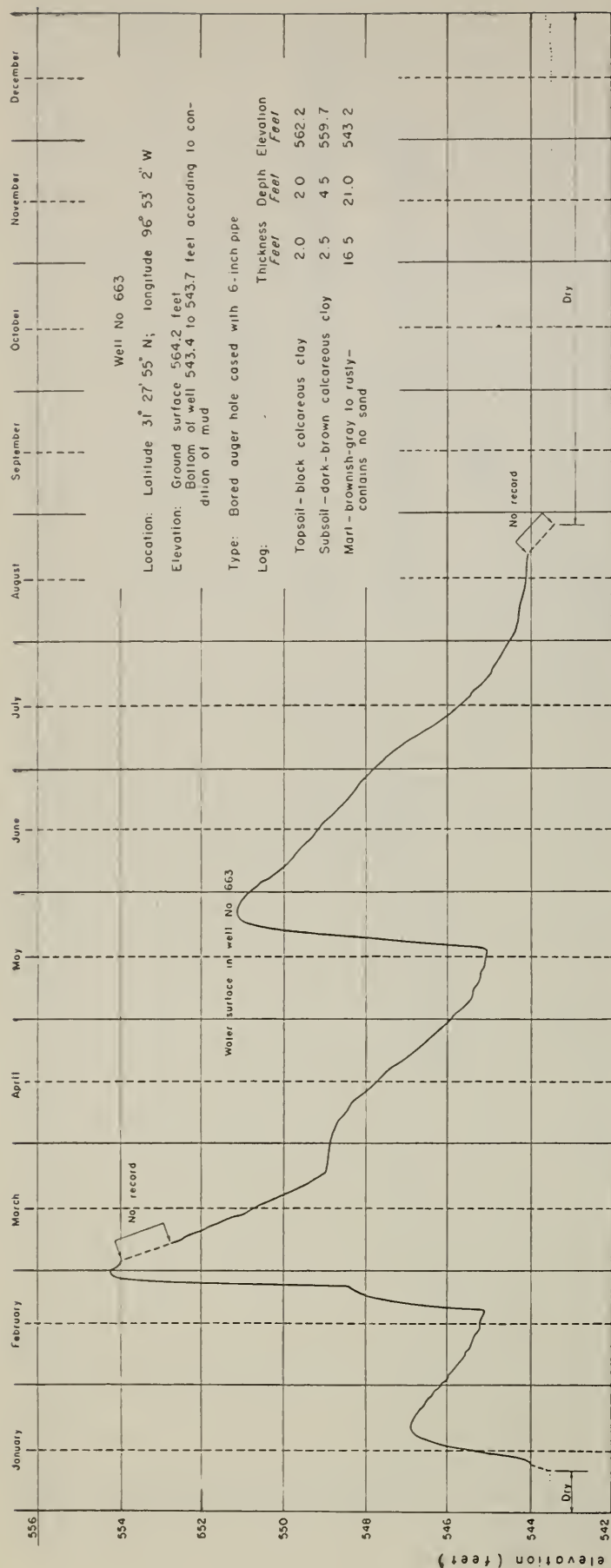


Figure 16.—Water level in wells 113 and 663, 1939. The graph for well 663 is plotted from daily noon readings as shown by the recorder, plus all peaks and troughs. The graph for well 113 is plotted from manual measurements made at intervals of 1 to 5 days.

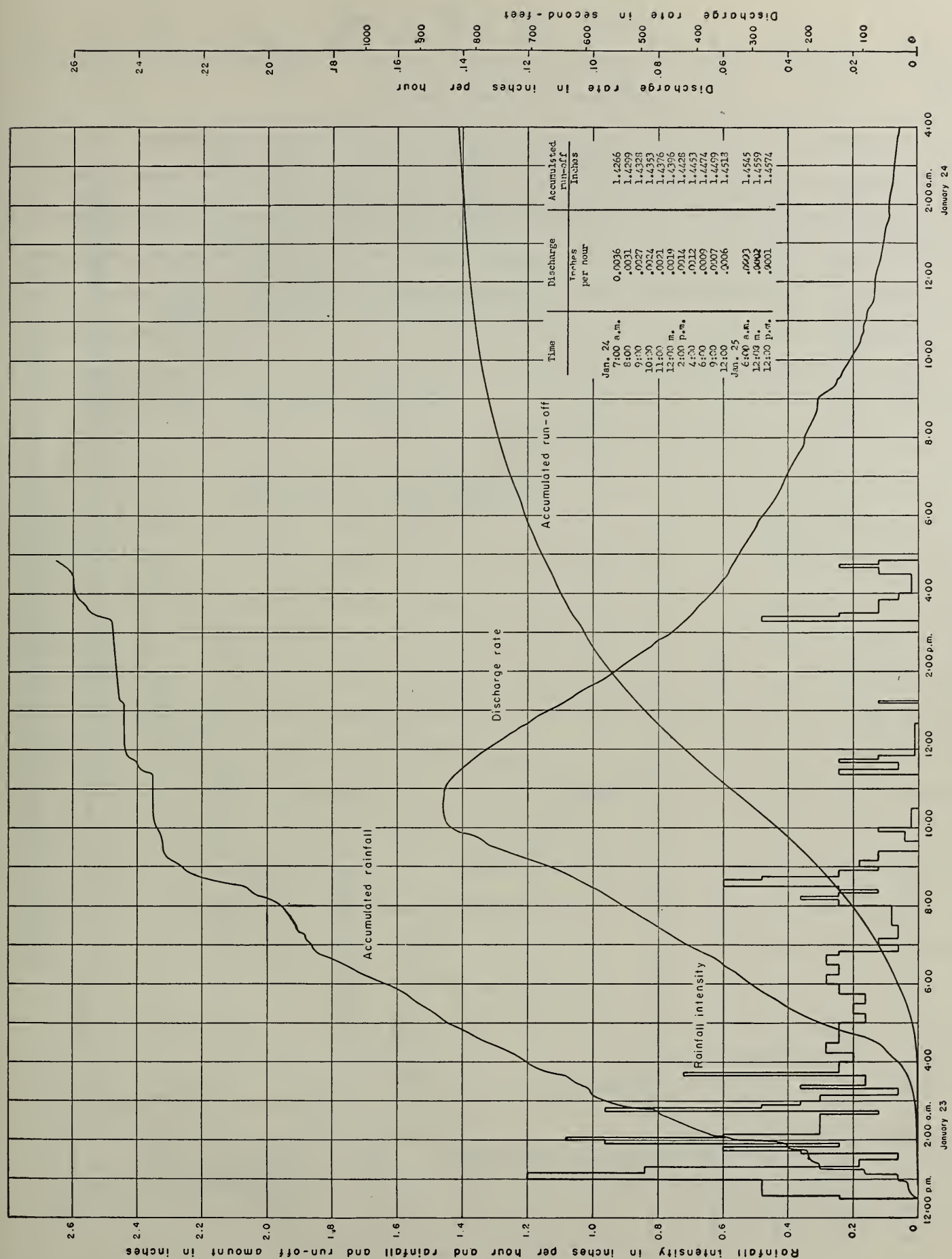


FIGURE 17.—Rainfall and run-off for watershed J, January 23-24, 1938.

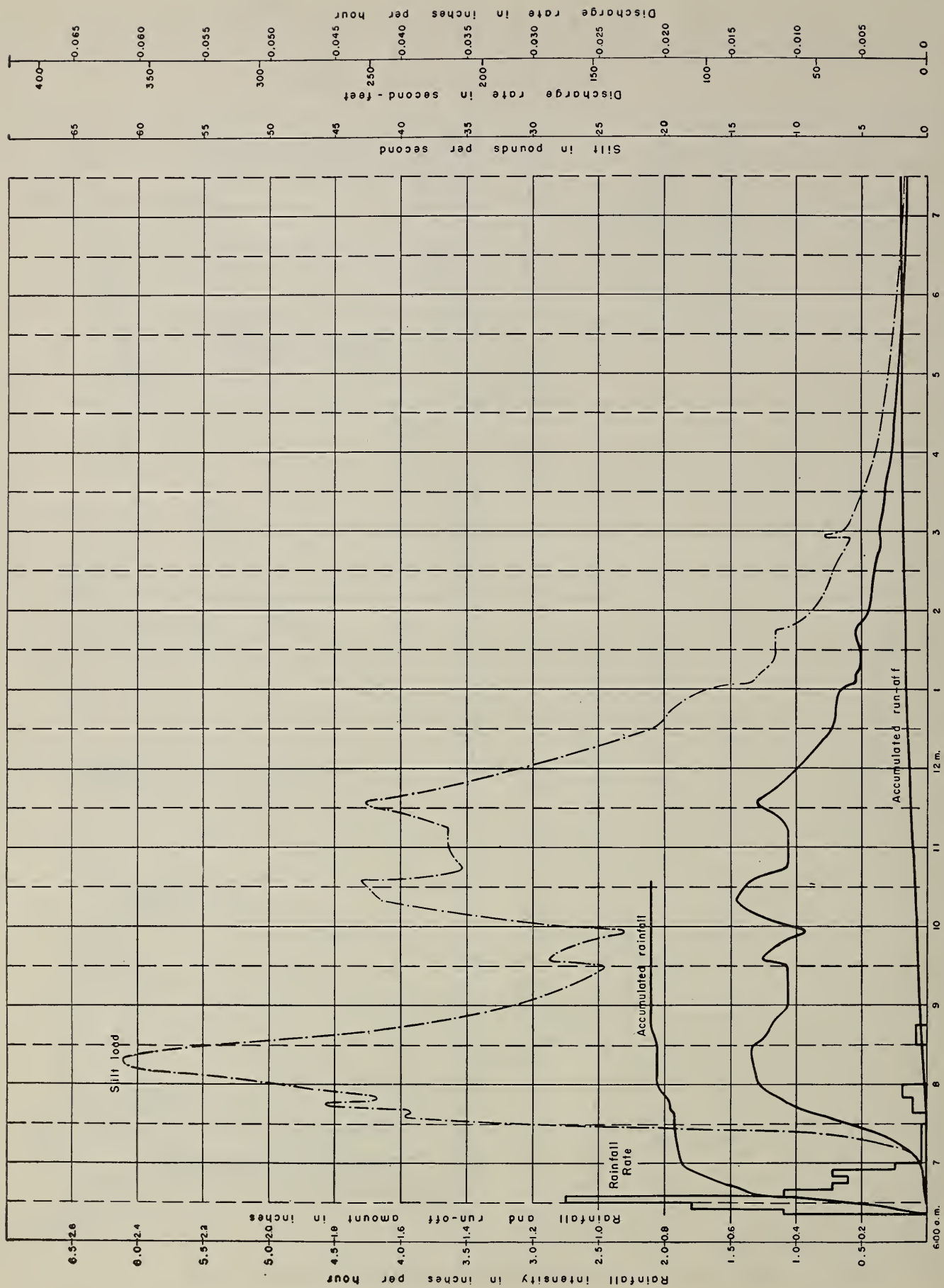


FIGURE 18.—Rainfall, run-off, and soil loss in run-off water for watershed J, May 17, 1939.

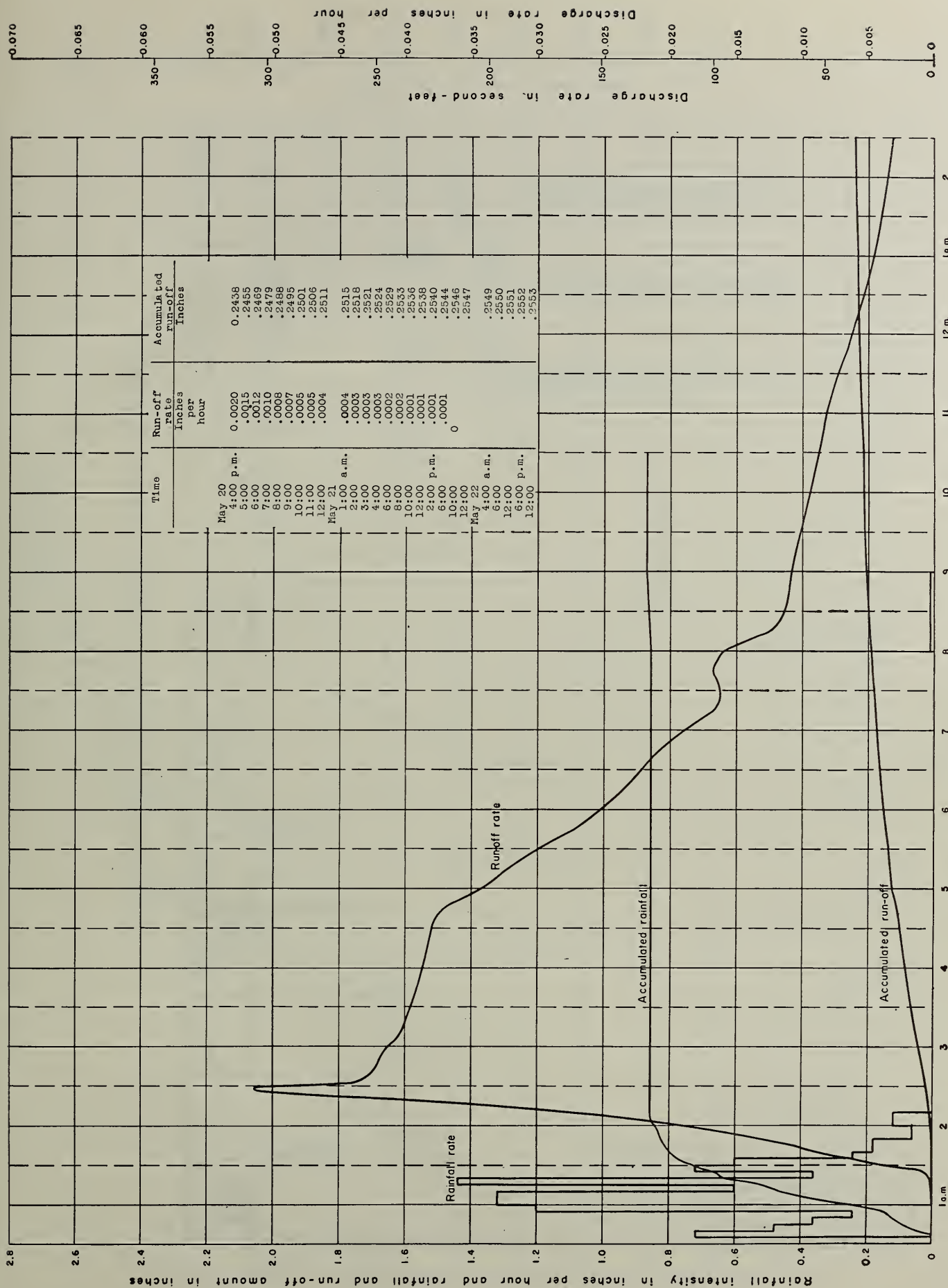


FIGURE 19.—Rainfall and run-off for watershed J, May 20, 1939.

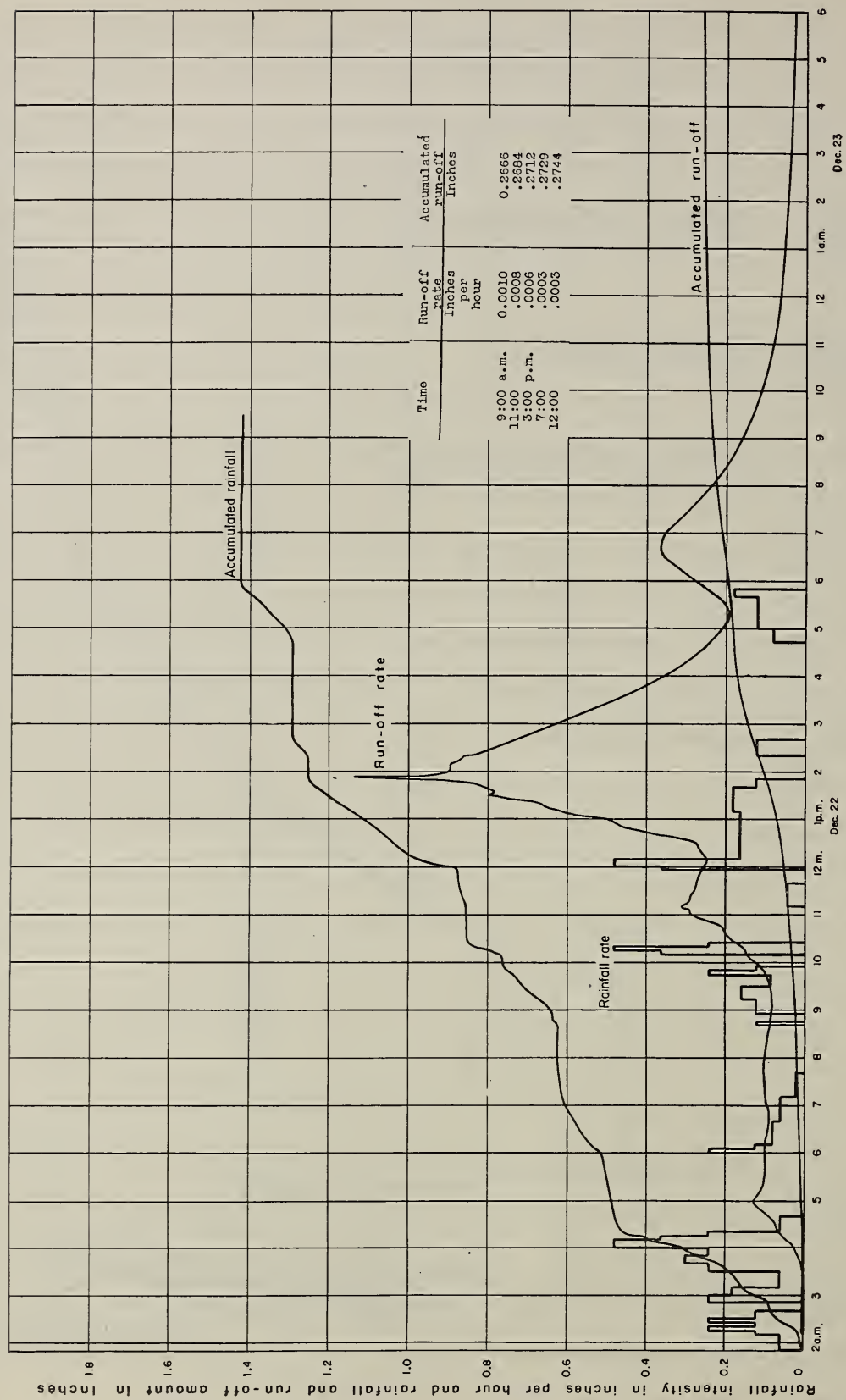


FIGURE 20.—Rainfall and run-off for watershed Y, December 22-23, 1937.

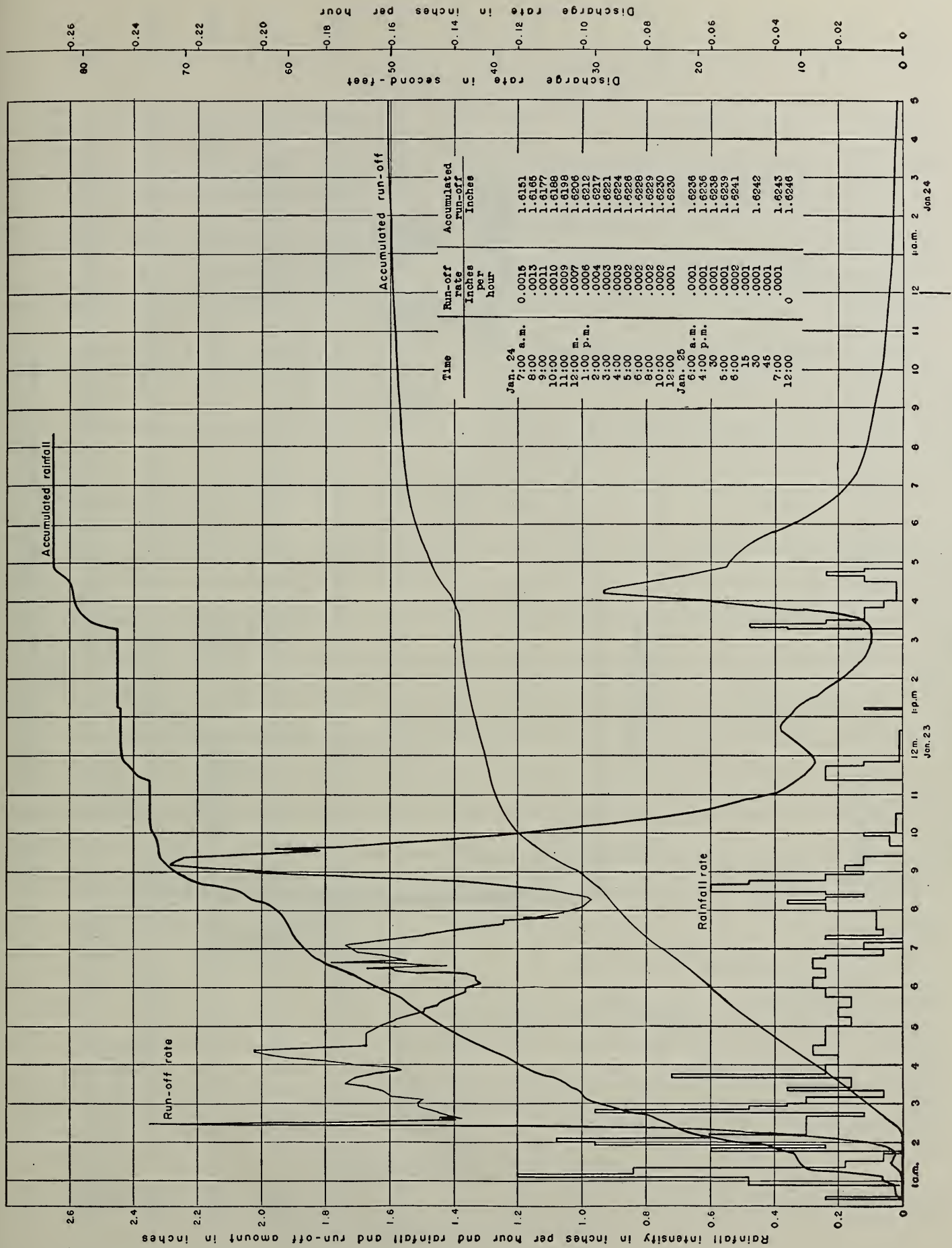


FIGURE 21.—Rainfall and run-off for watershed Y, January 23, 1938.

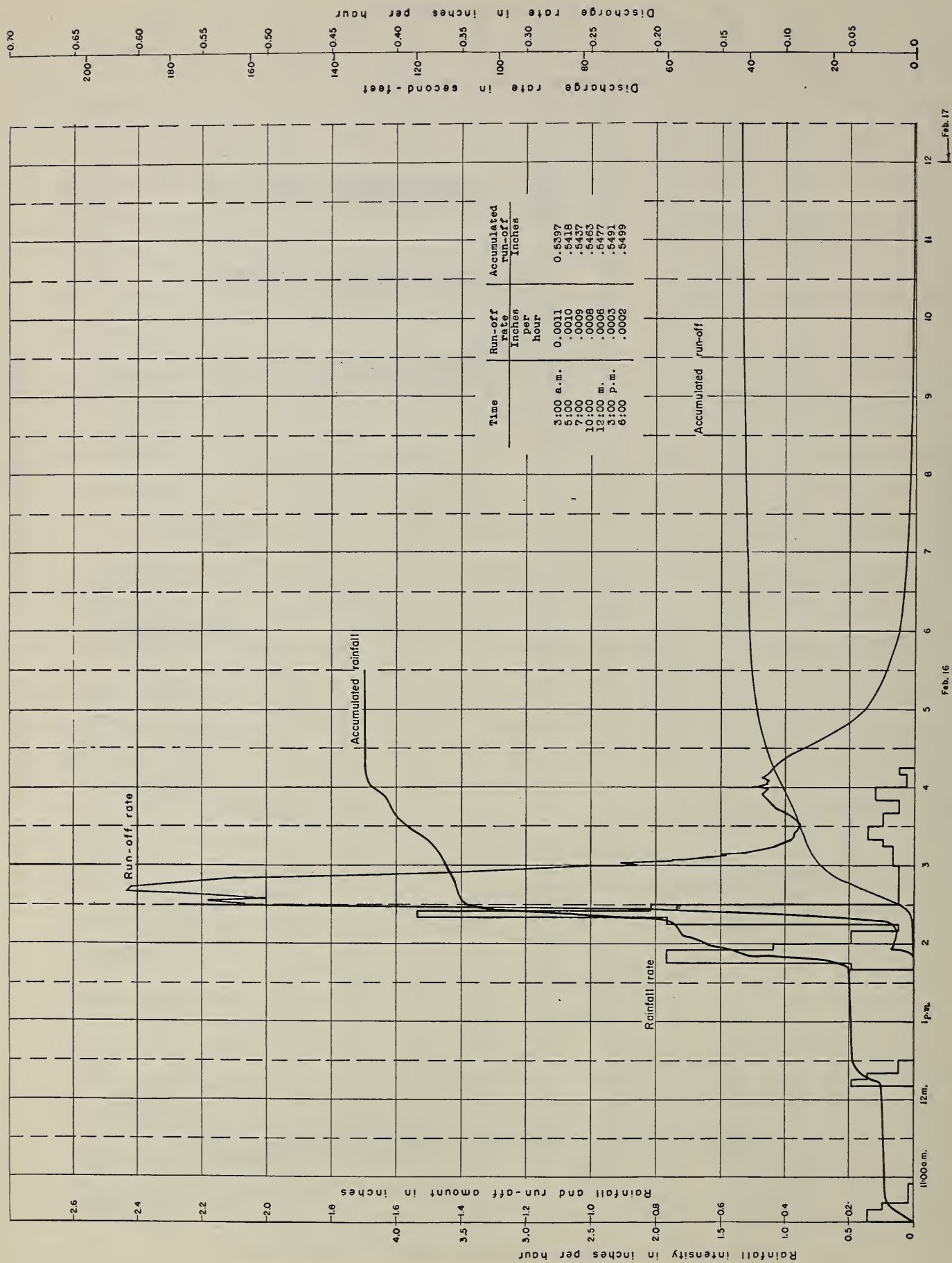


FIGURE 22.—Rainfall and run-off for watershed Y, February 16, 1938.

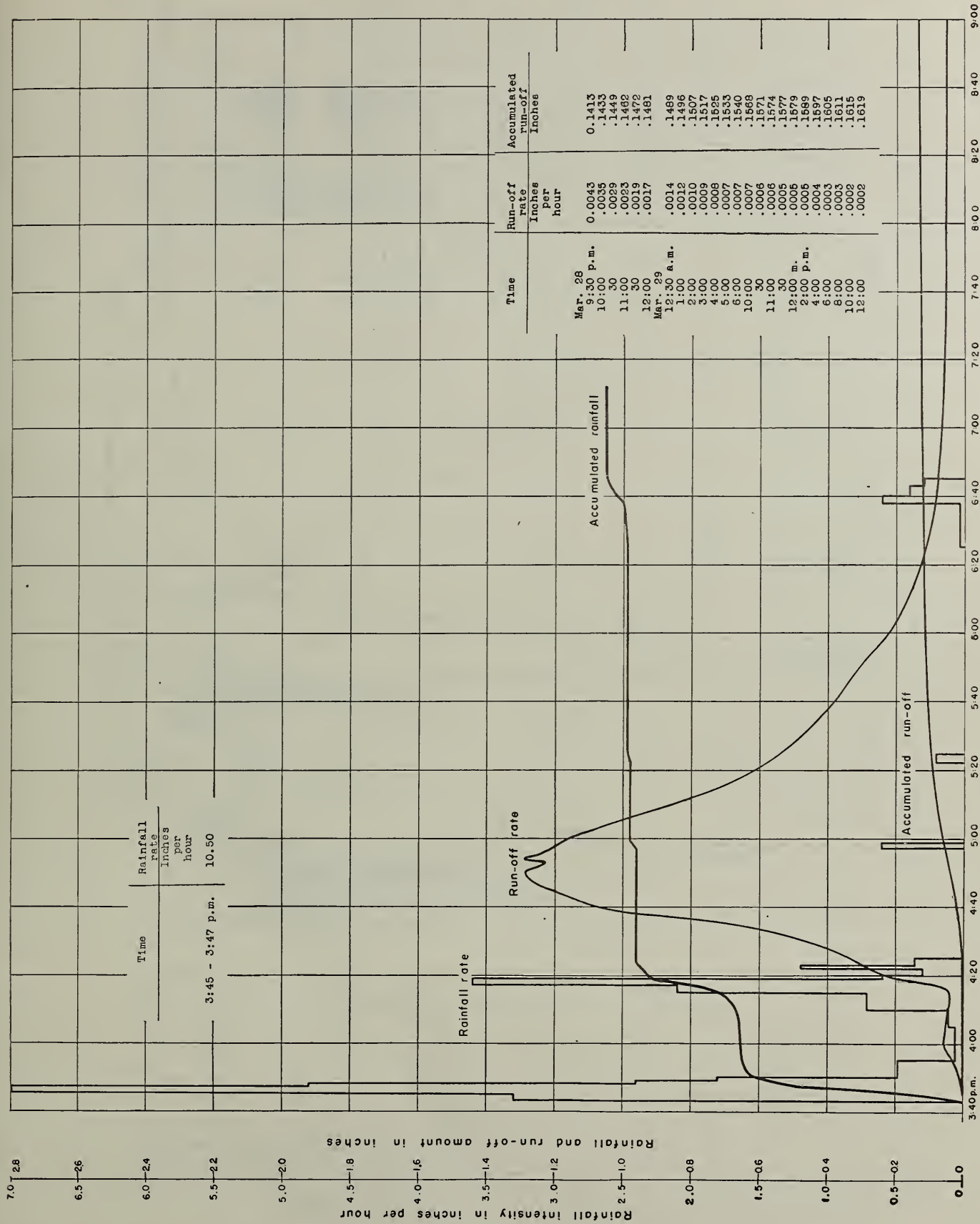


Figure 23.—Rainfall and run-off for watershed Y, March 28, 1938.

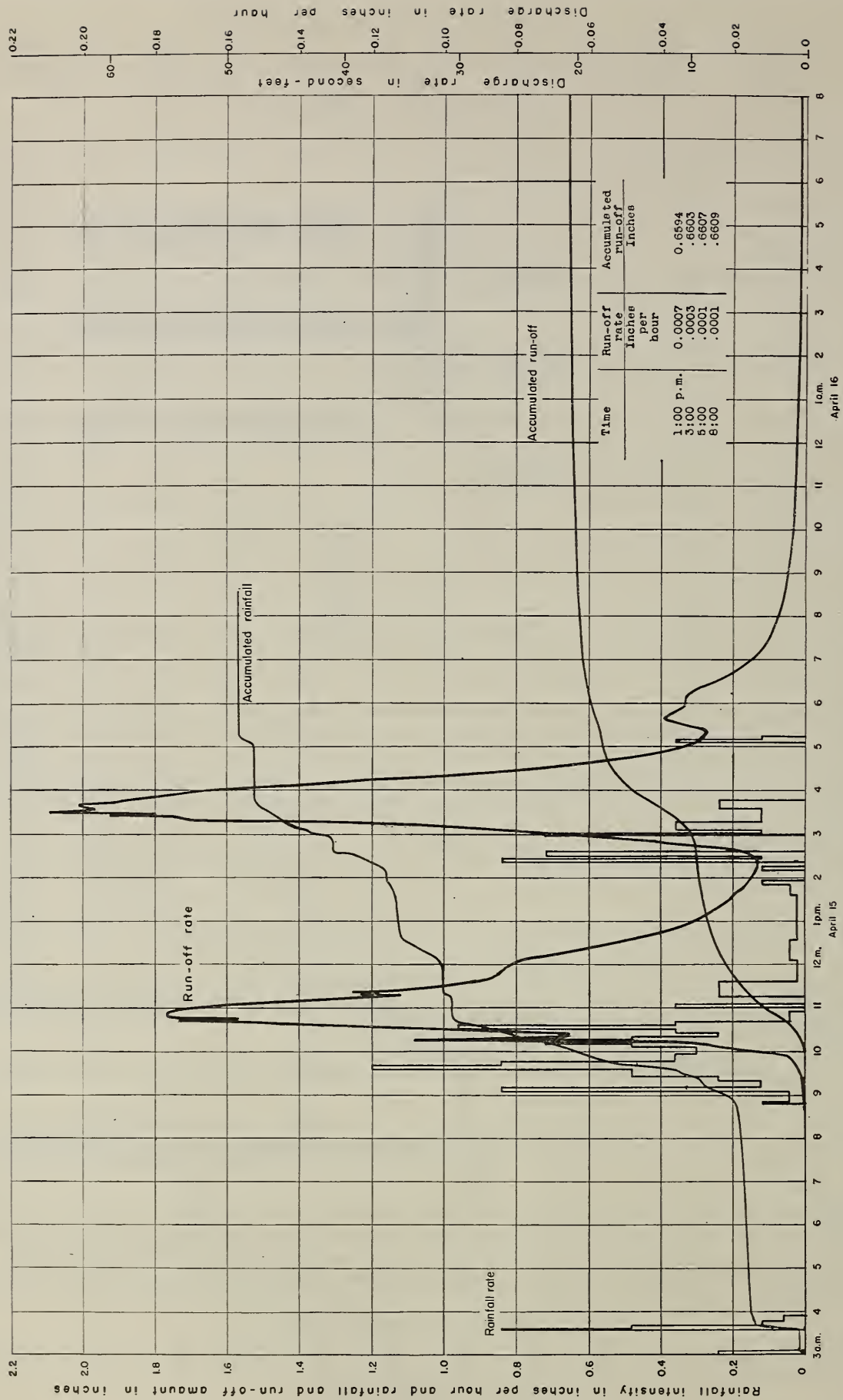


FIGURE 24.—Rainfall and run-off for watershed Y, April 15, 1938.

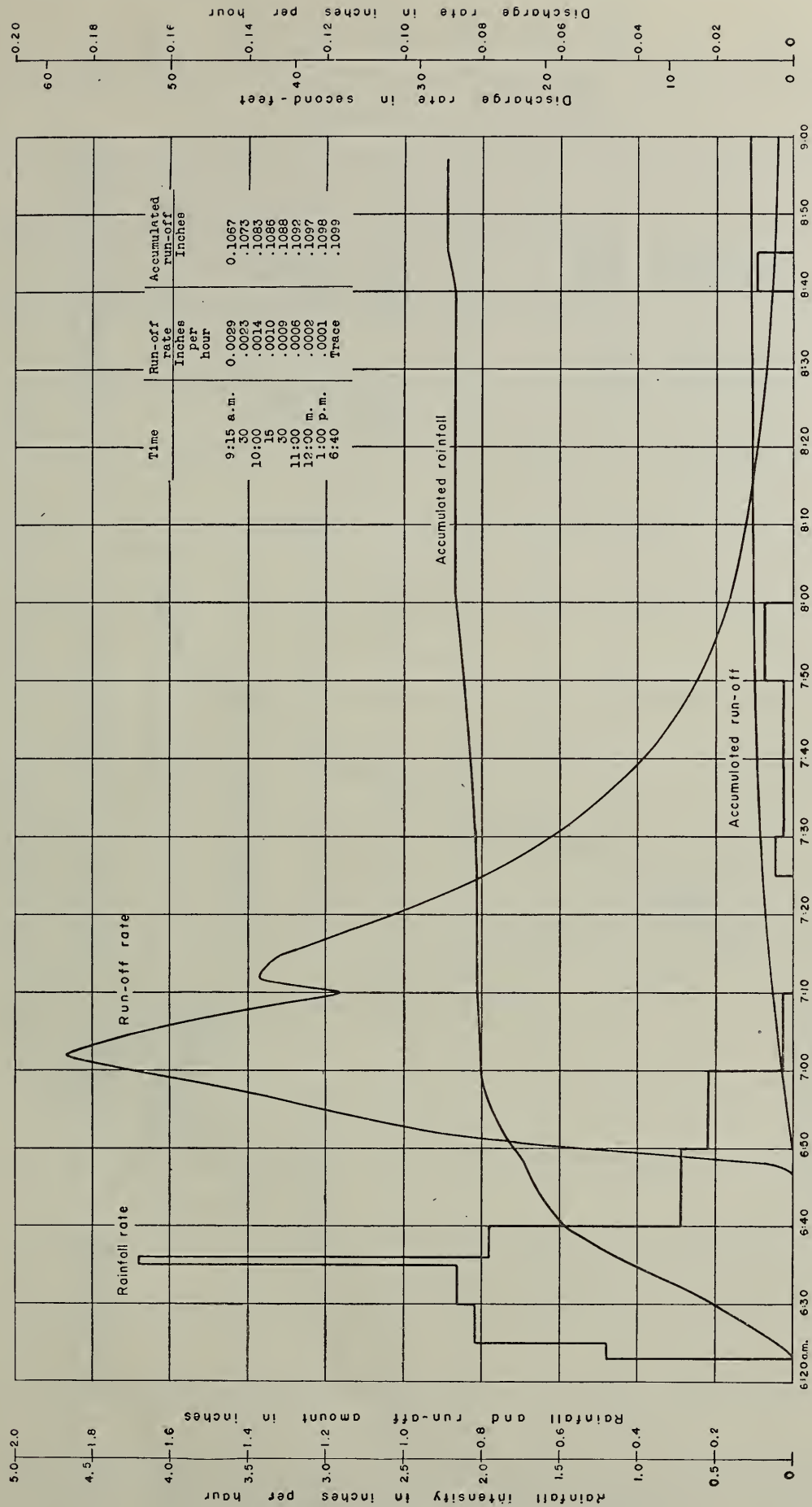


FIGURE 25.—Rainfall and run-off for watershed Y, a. m. May 17, 1939.

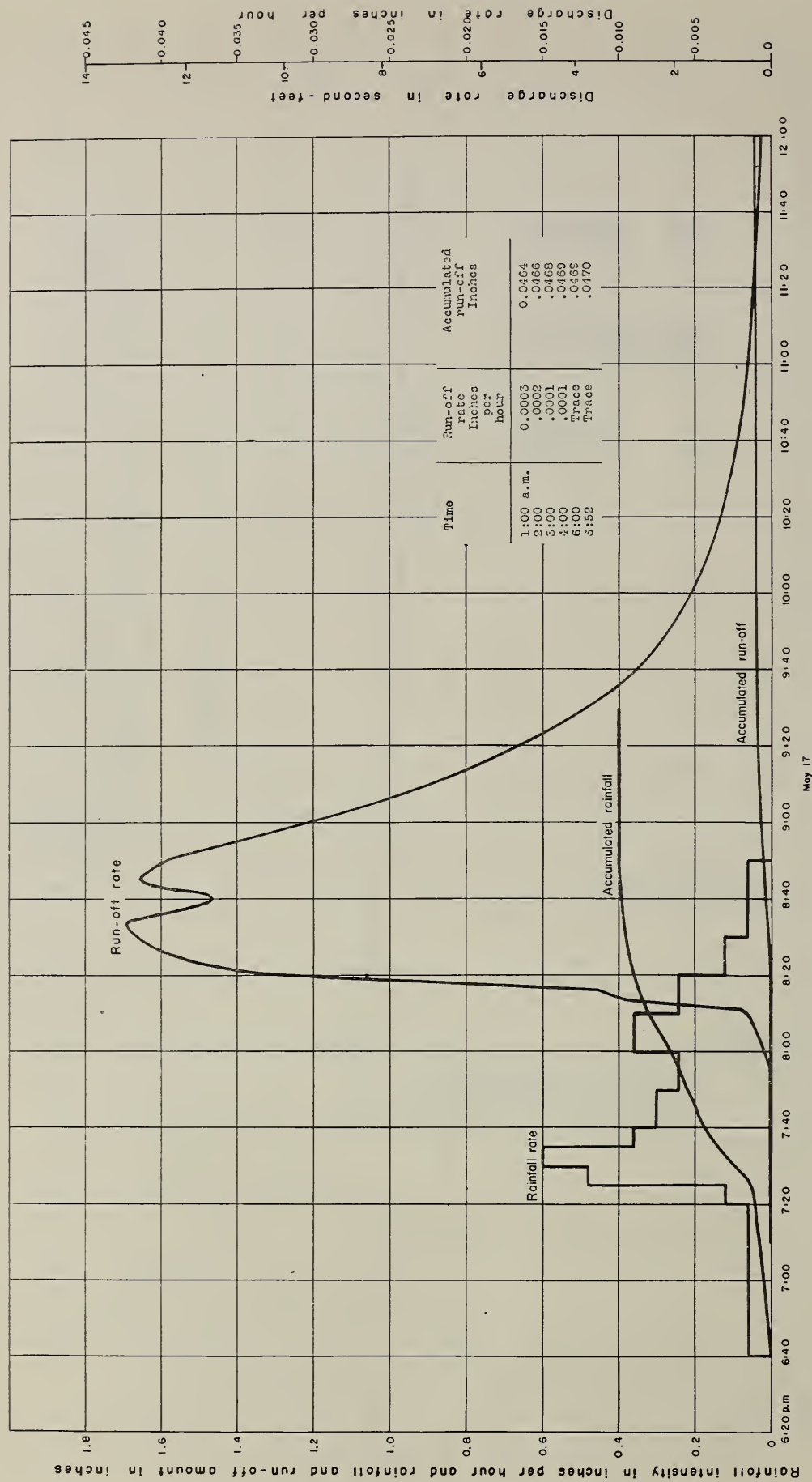


FIGURE 26.—Rainfall and run-off for watershed Y, p. m. May 17, 1939.

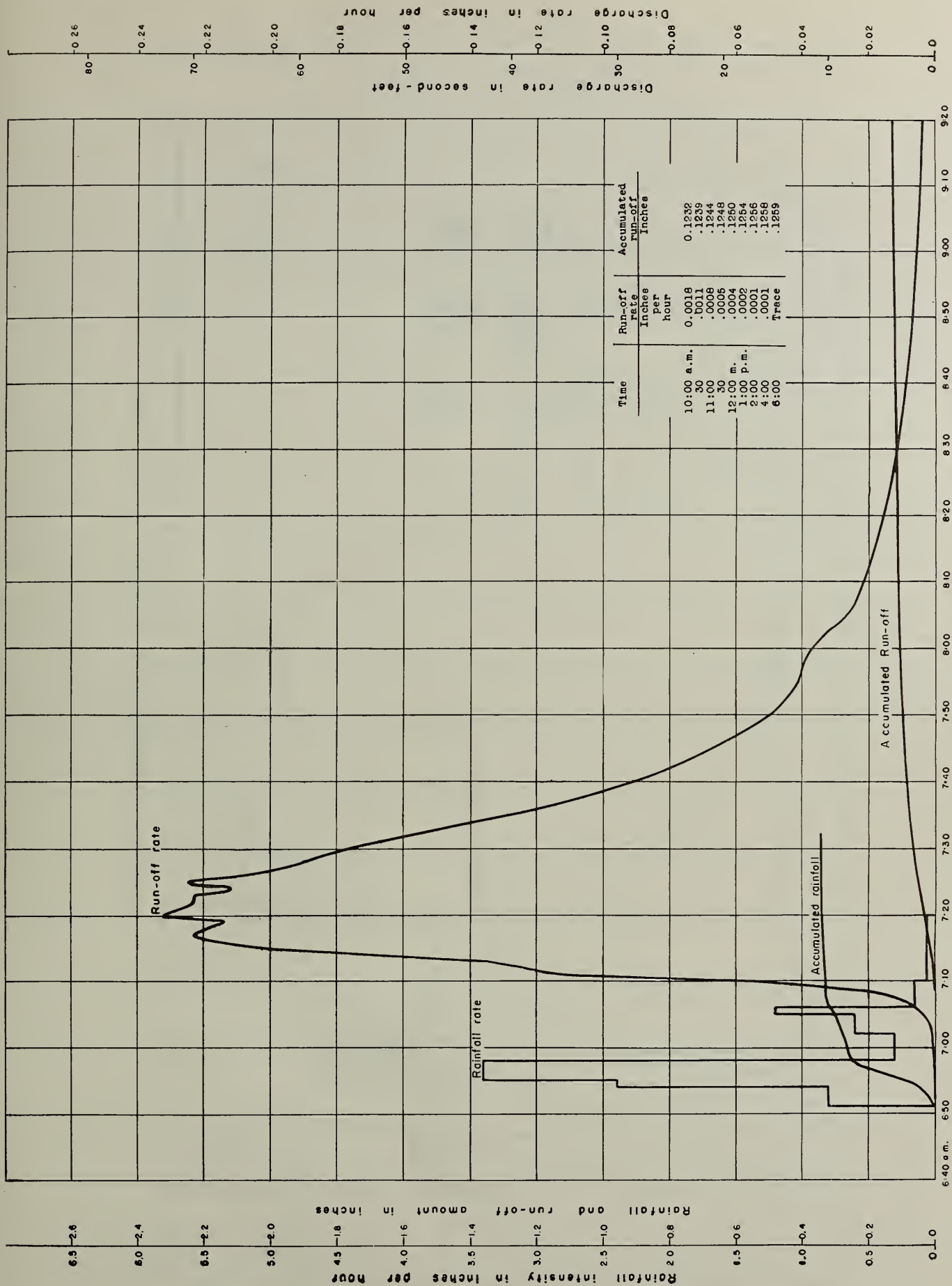


FIGURE 27.—Rainfall and run-off for watershed Y, May 18, 1939.

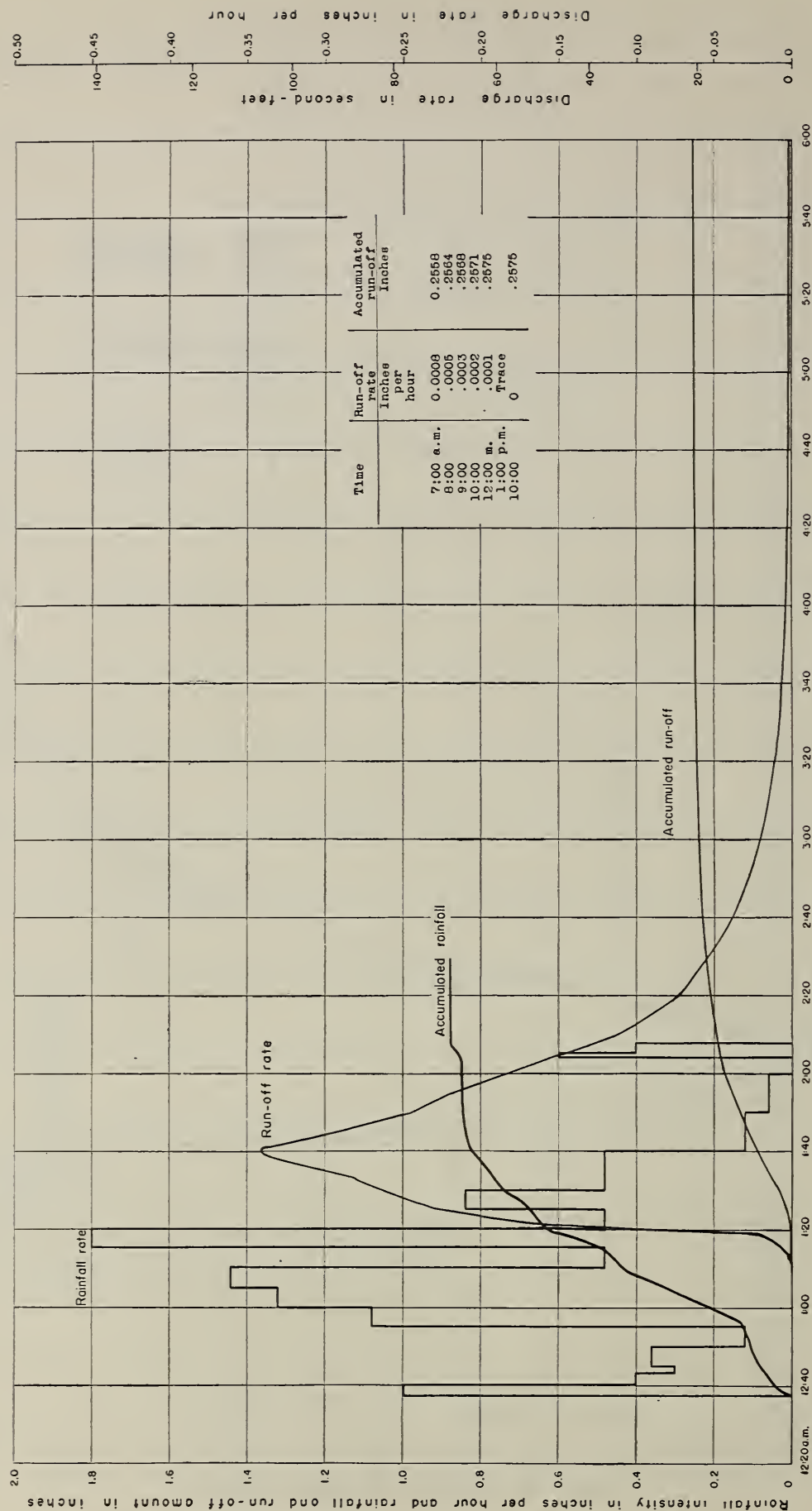


FIGURE 28.—Rainfall and run-off for watershed Y, May 20, 1939.

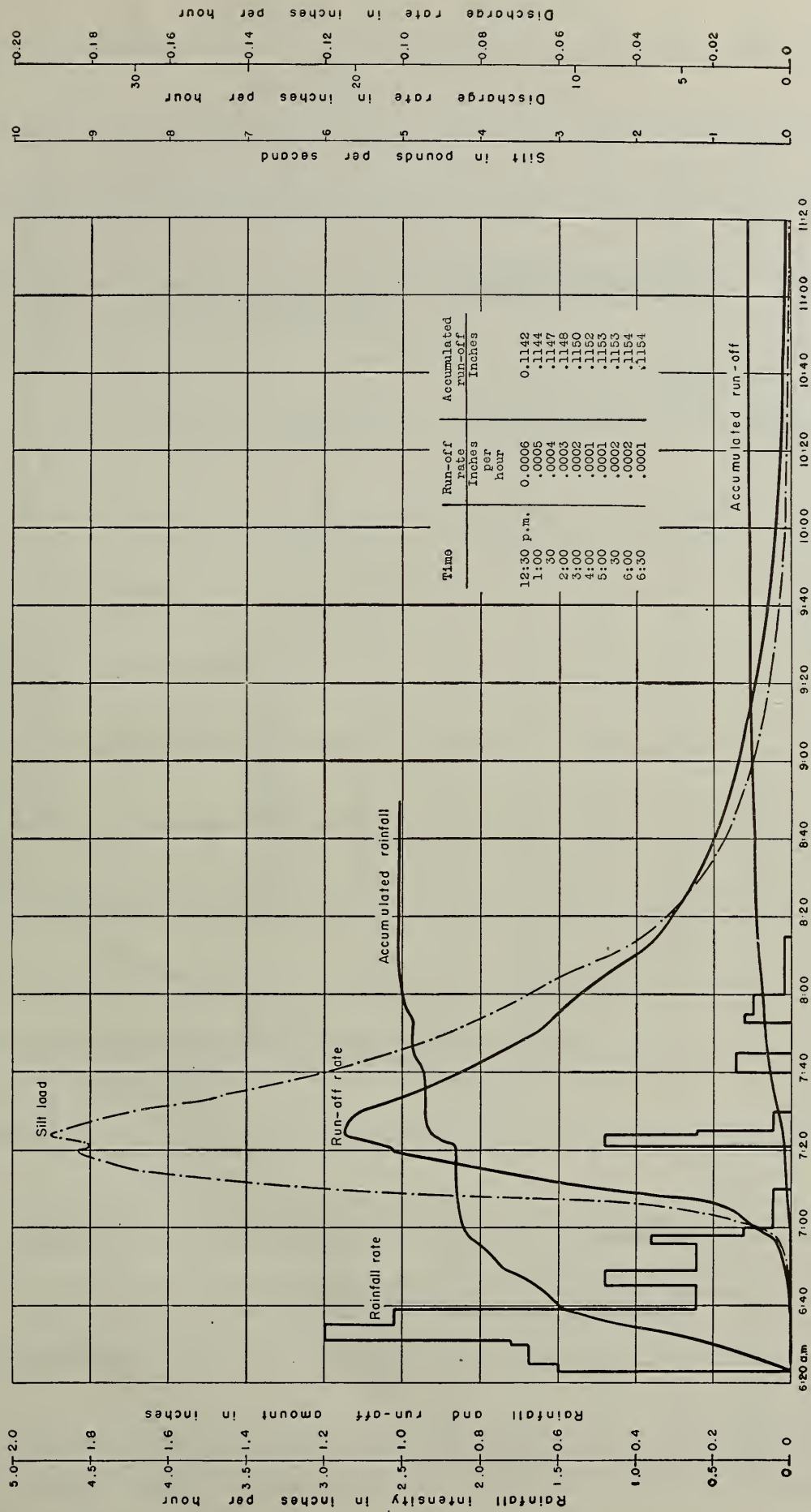


FIGURE 29.—Rainfall, run-off, and soil loss in run-off water for watershed W1, a. m. May 17, 1939.

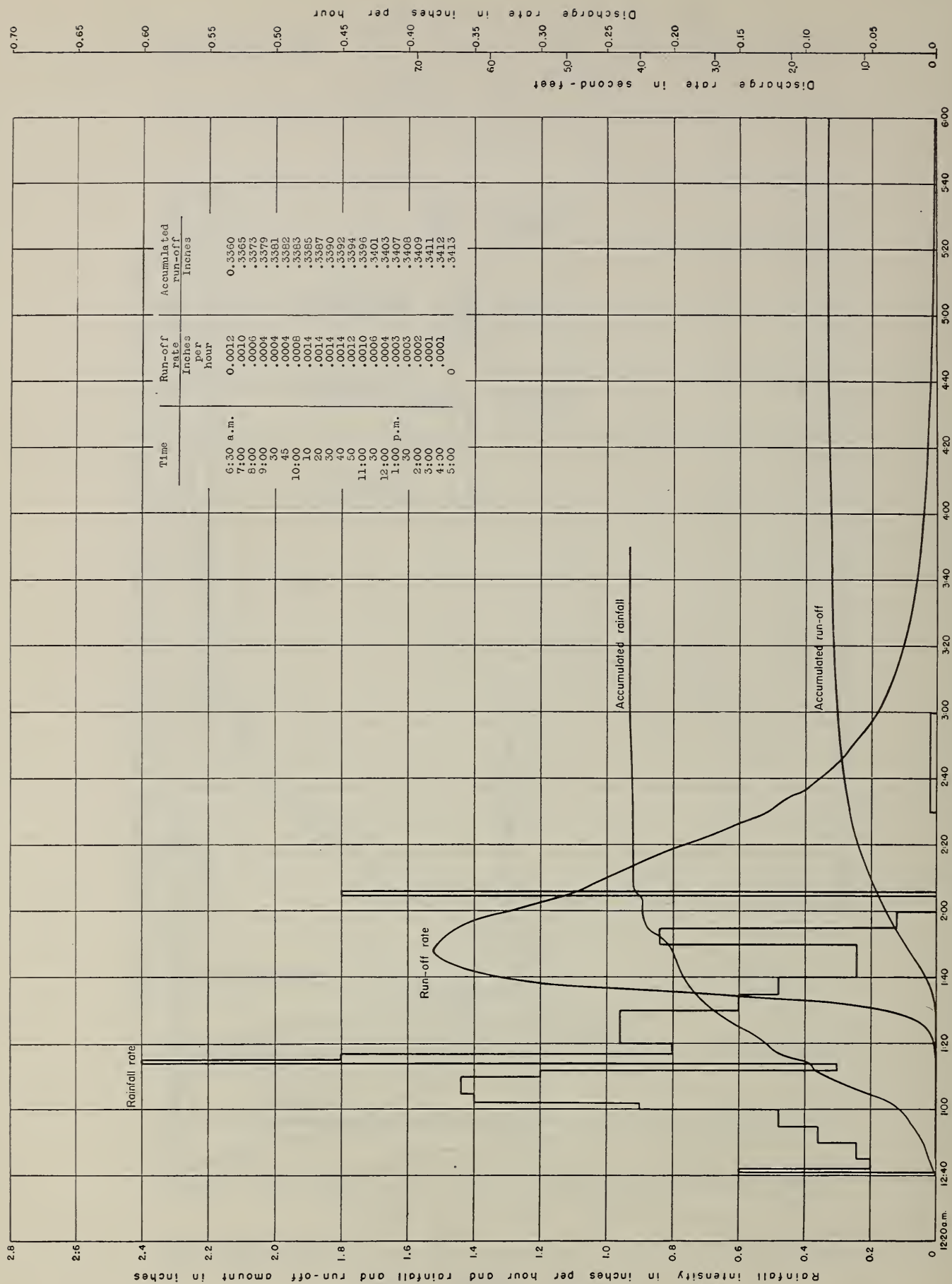


FIGURE 30.—Rainfall and run-off for watershed W1, May 20, 1939.

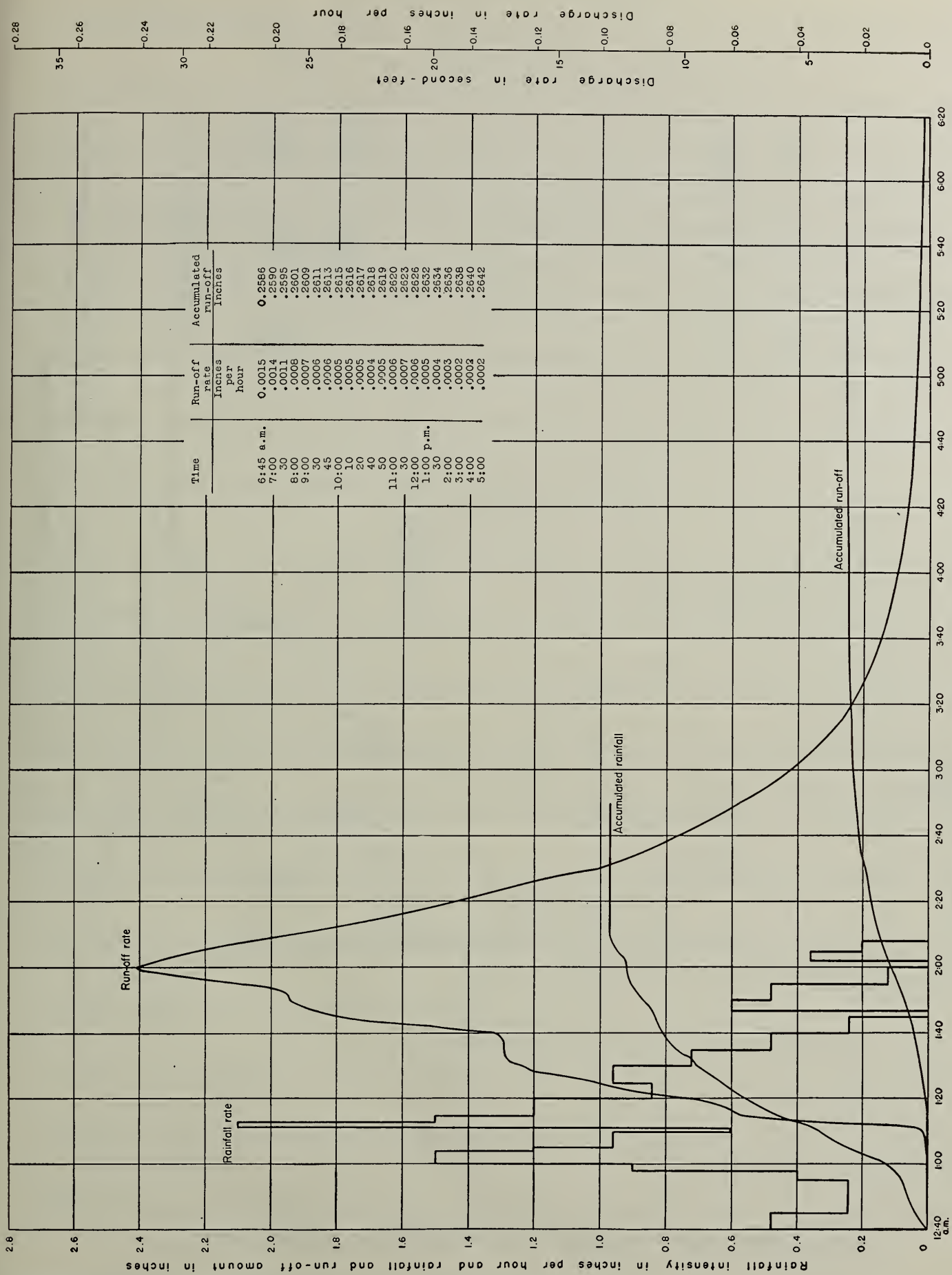


FIGURE 31.—Rainfall and run-off for watershed W2, May 20, 1939.

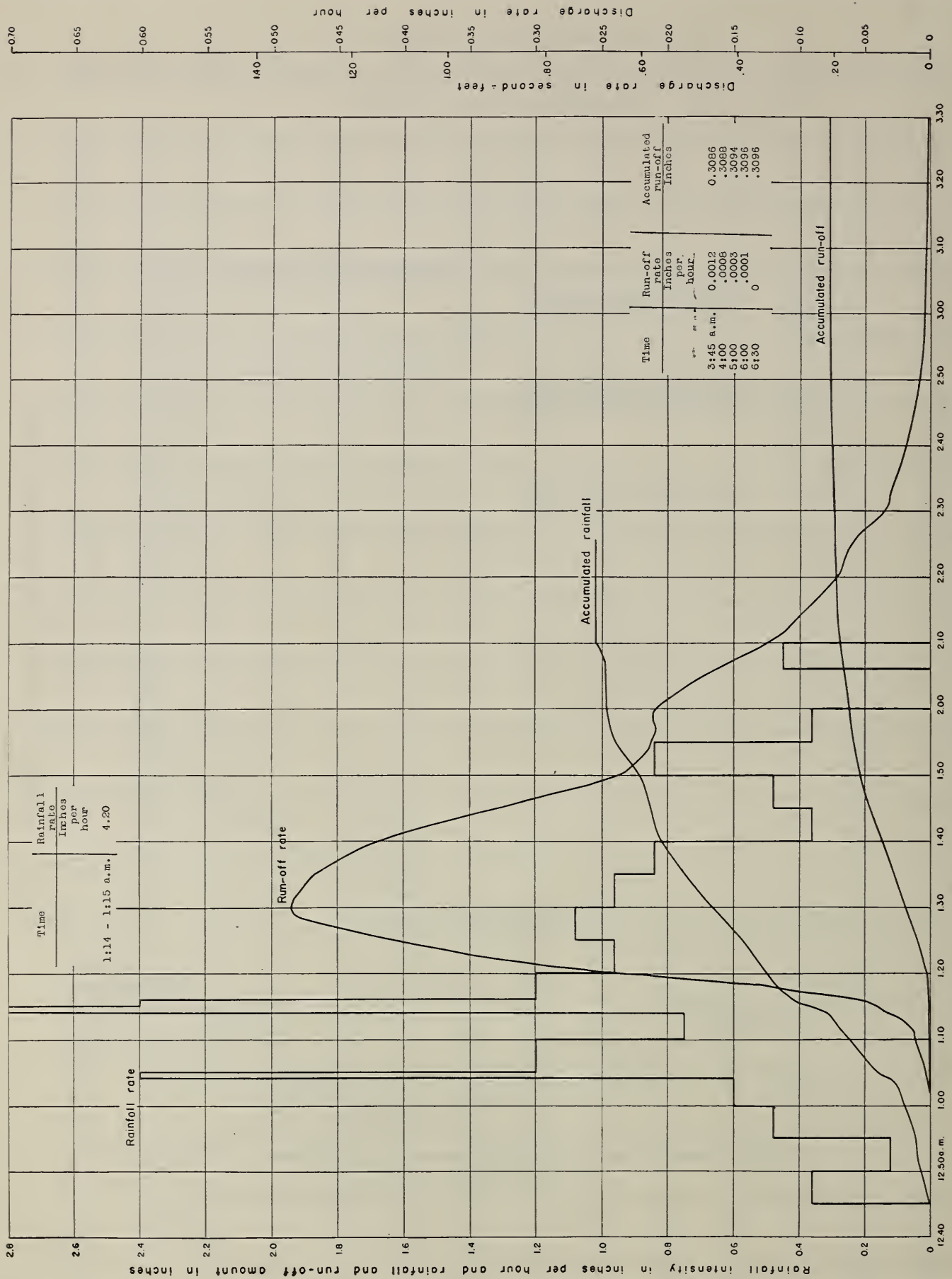


FIGURE 32.—Rainfall and run-off for watershed 2, May 20, 1939.

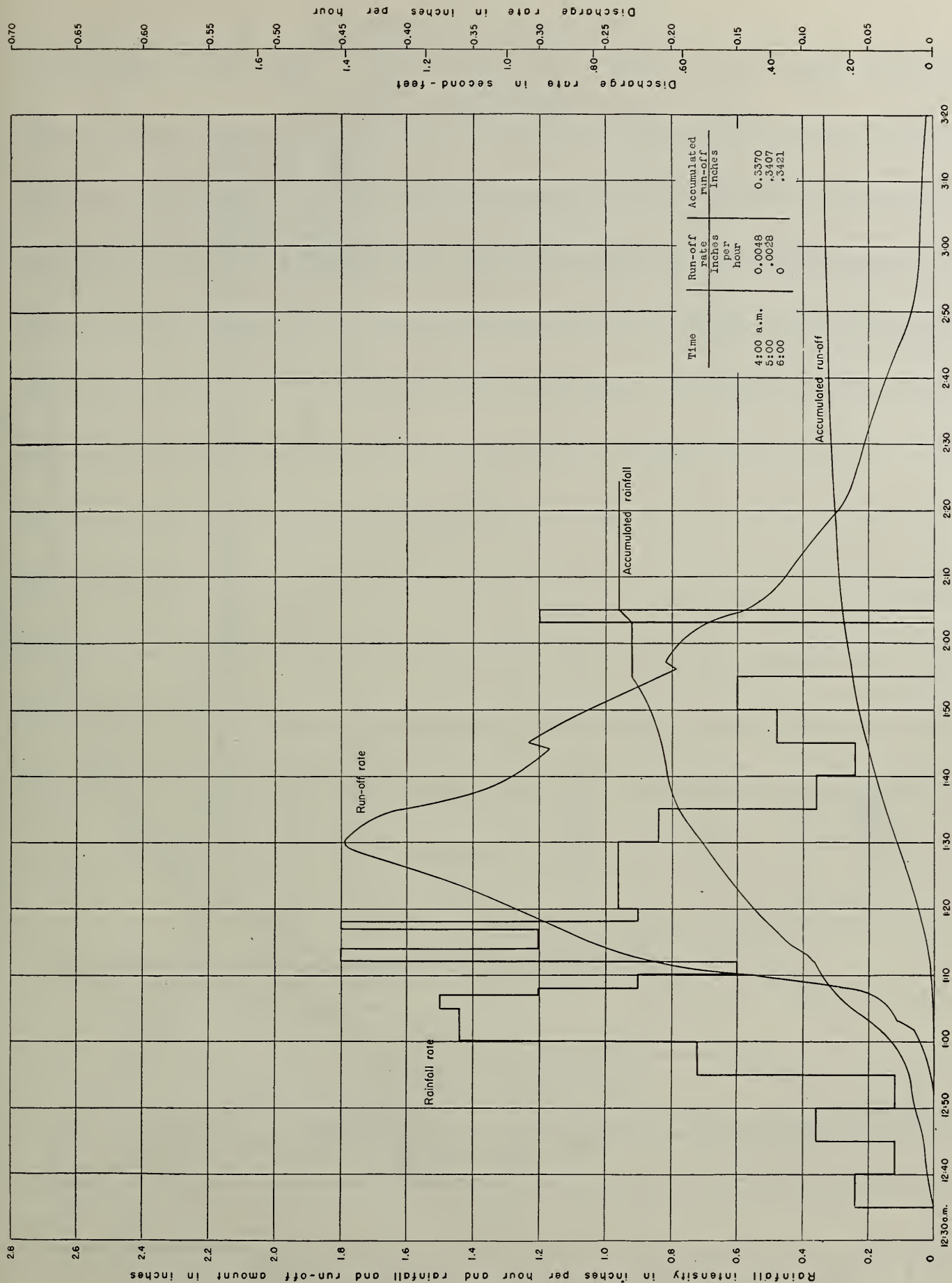


FIGURE 33.—Rainfall and run-off for watershed 3, May 20, 1939.

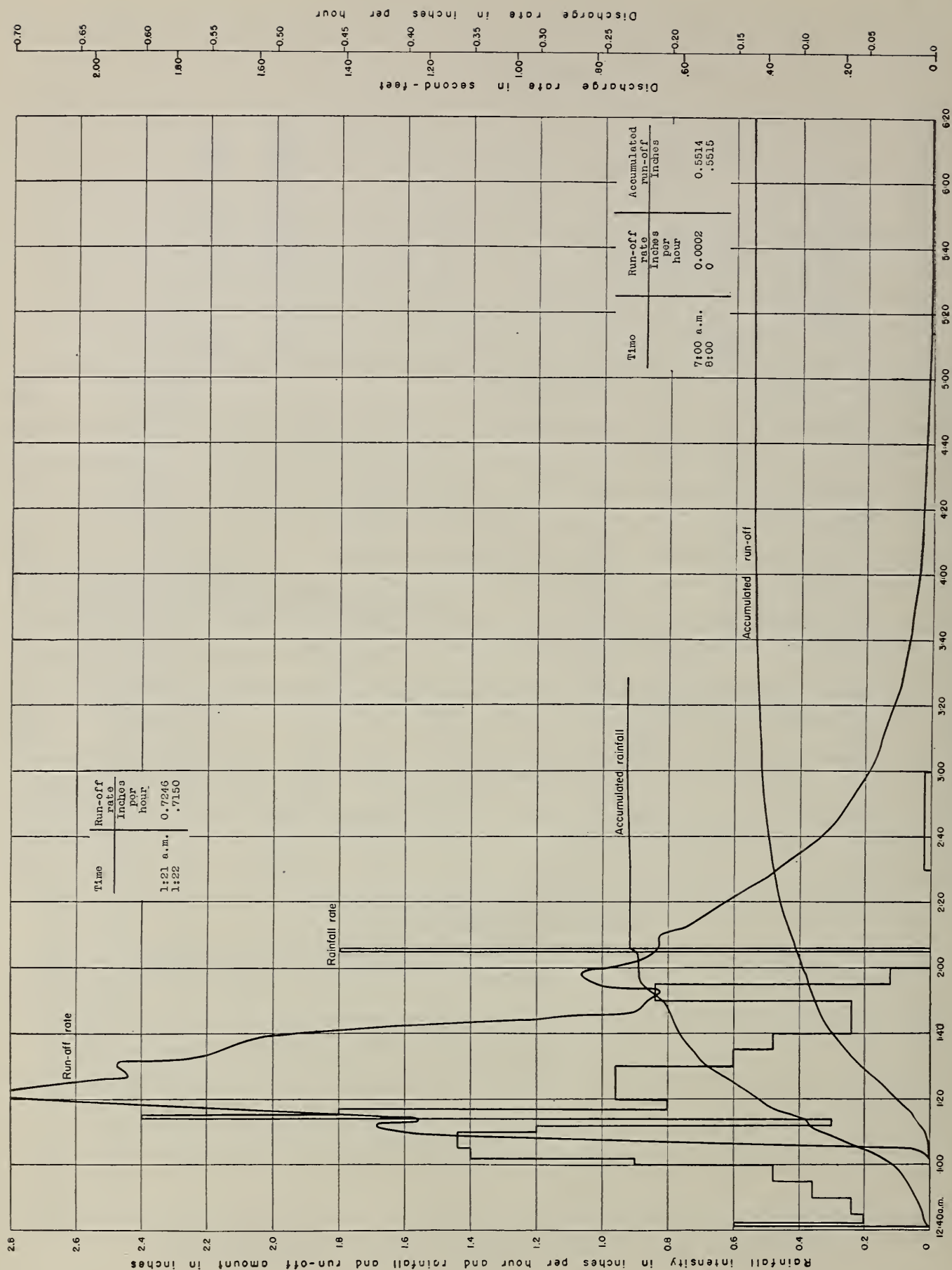


FIGURE 34.—Rainfall and run-off for watershed 5, May 20, 1939.

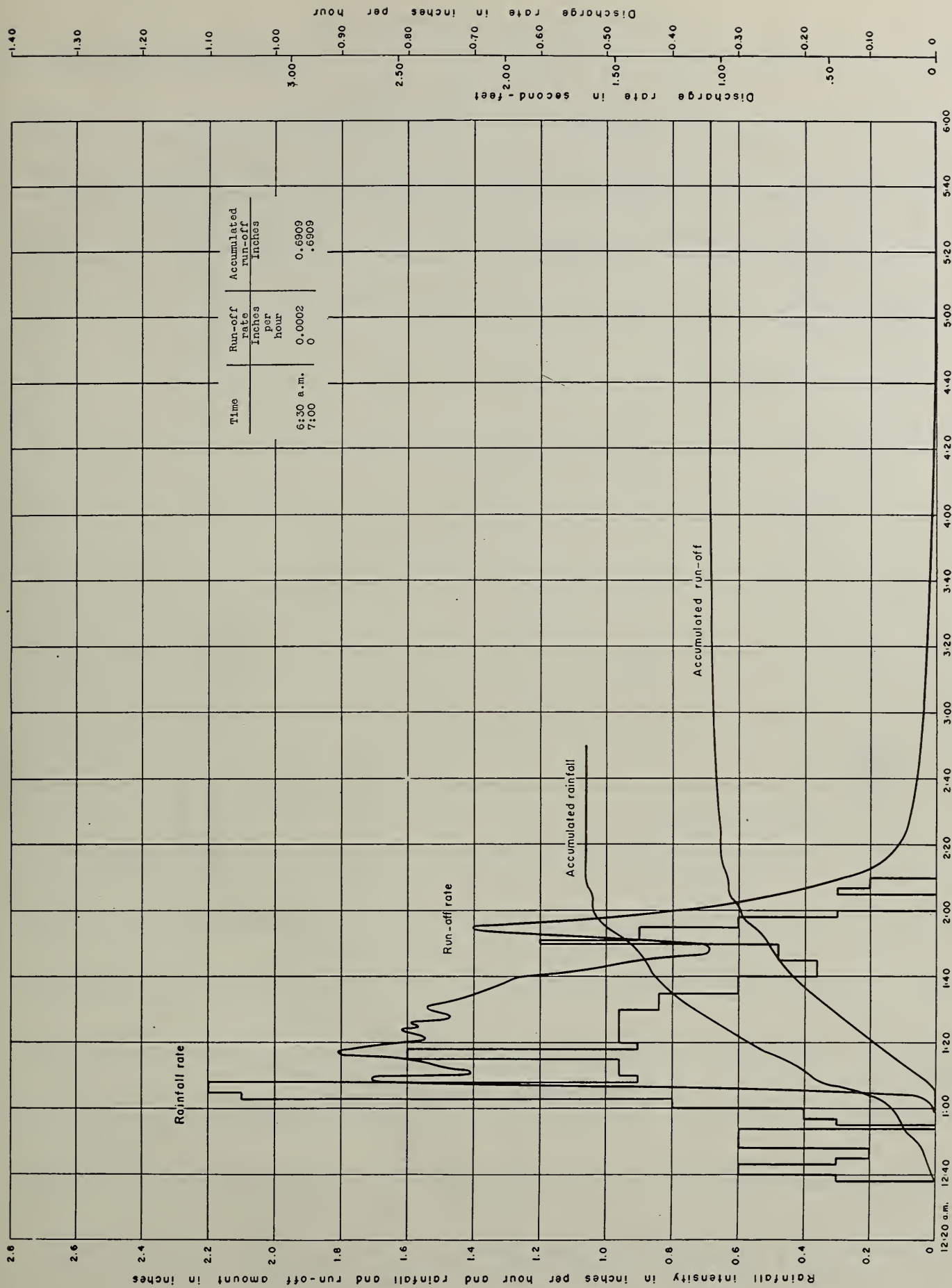


FIGURE 35.—Rainfall and run-off for watershed 6, May 20, 1939.

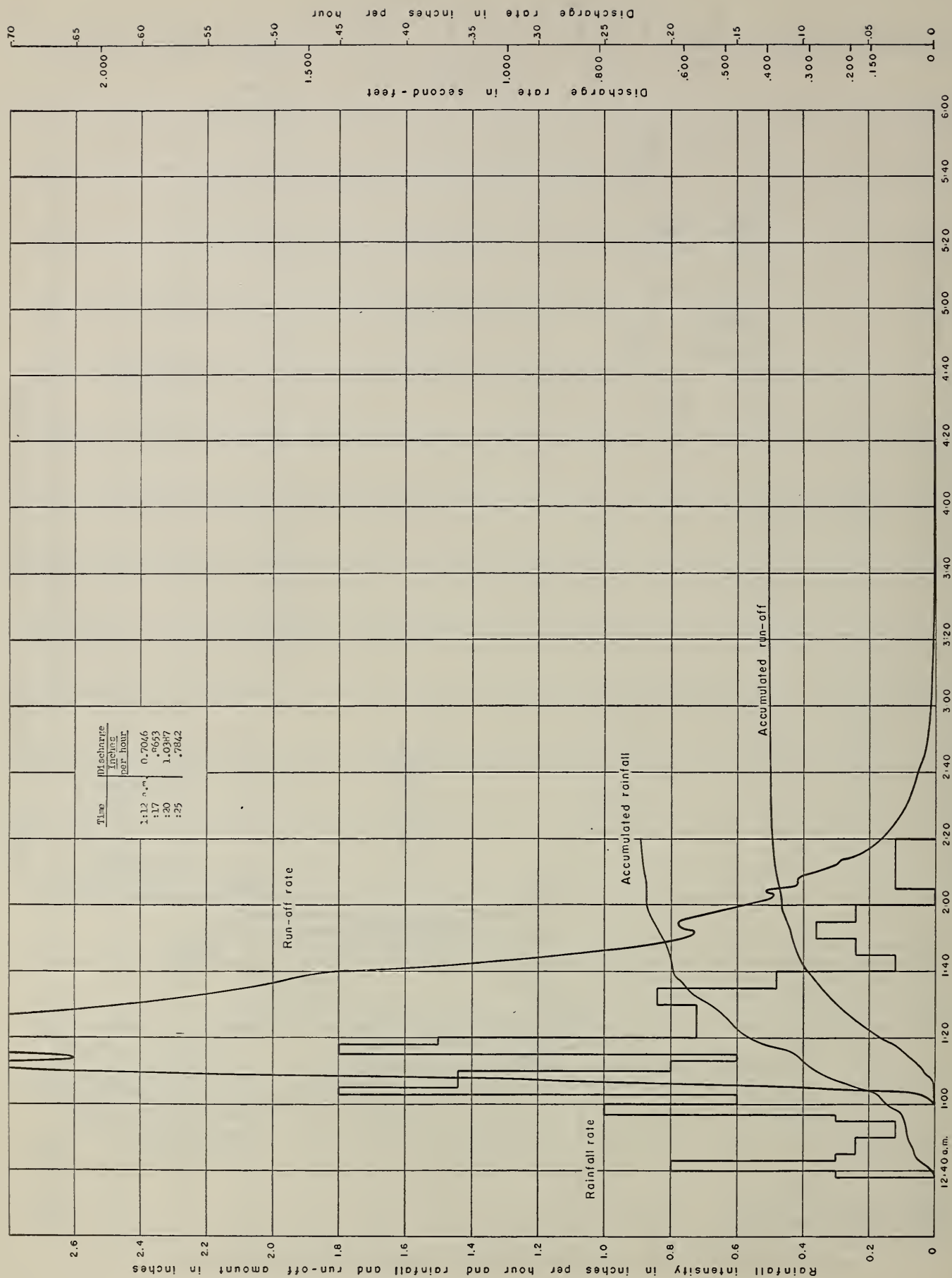


Figure 36.—Rainfall and run-off for watershed 7, May 20, 1939.

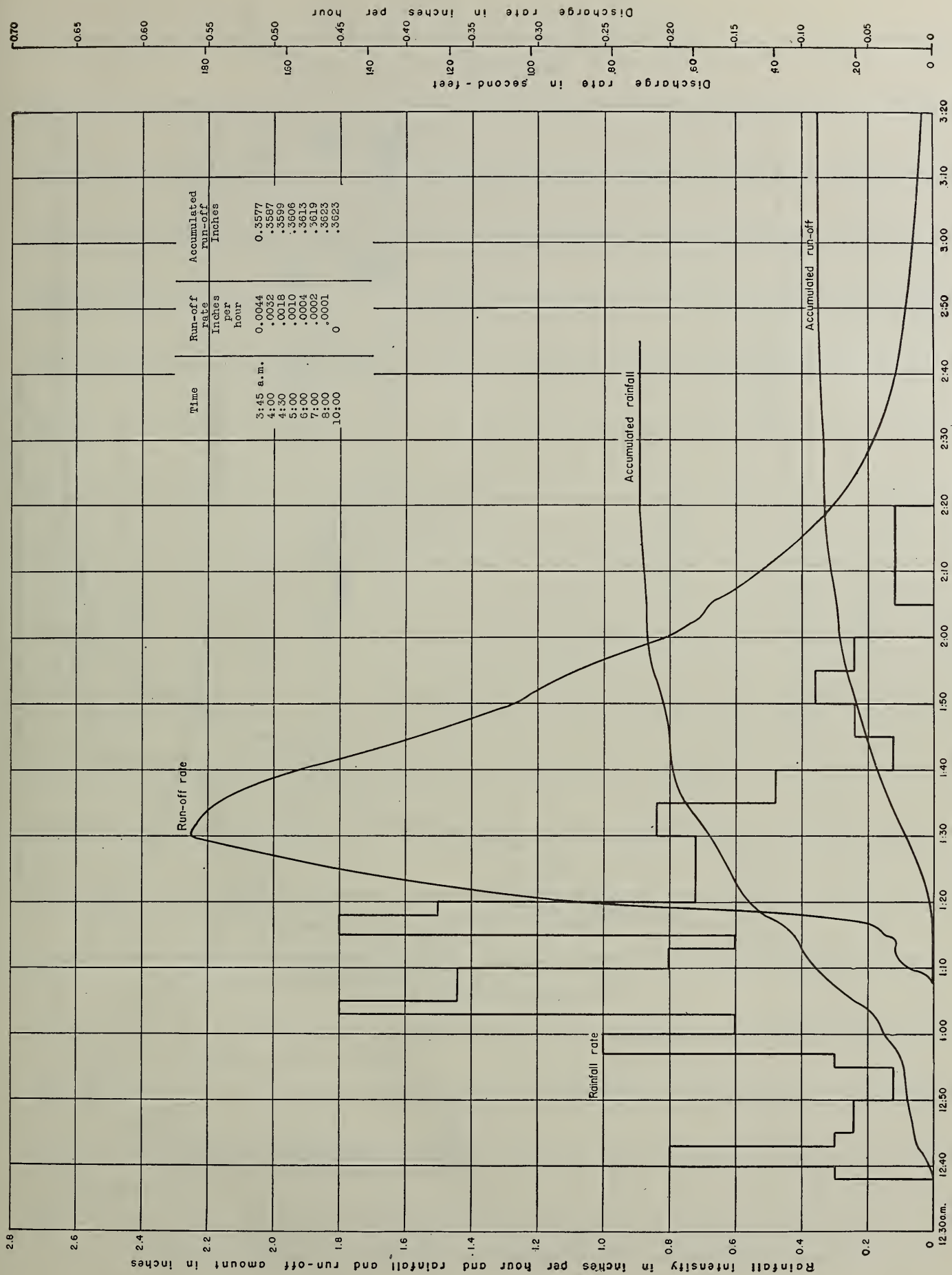


FIGURE 37.—Rainfall and run-off for watershed 11, May 20, 1939.

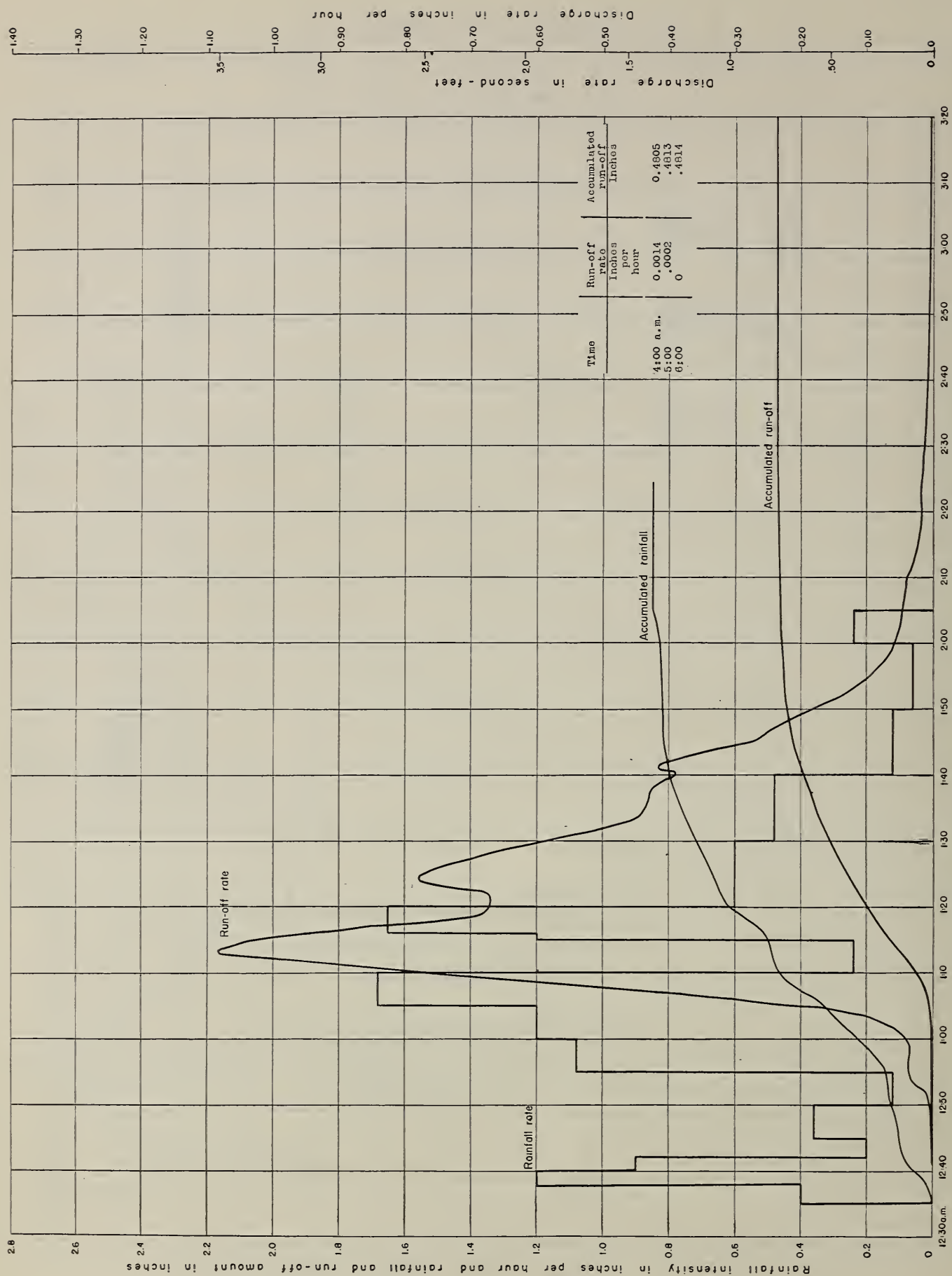


Figure 38.—Rainfall and run-off for watershed 13, May 20, 1939.

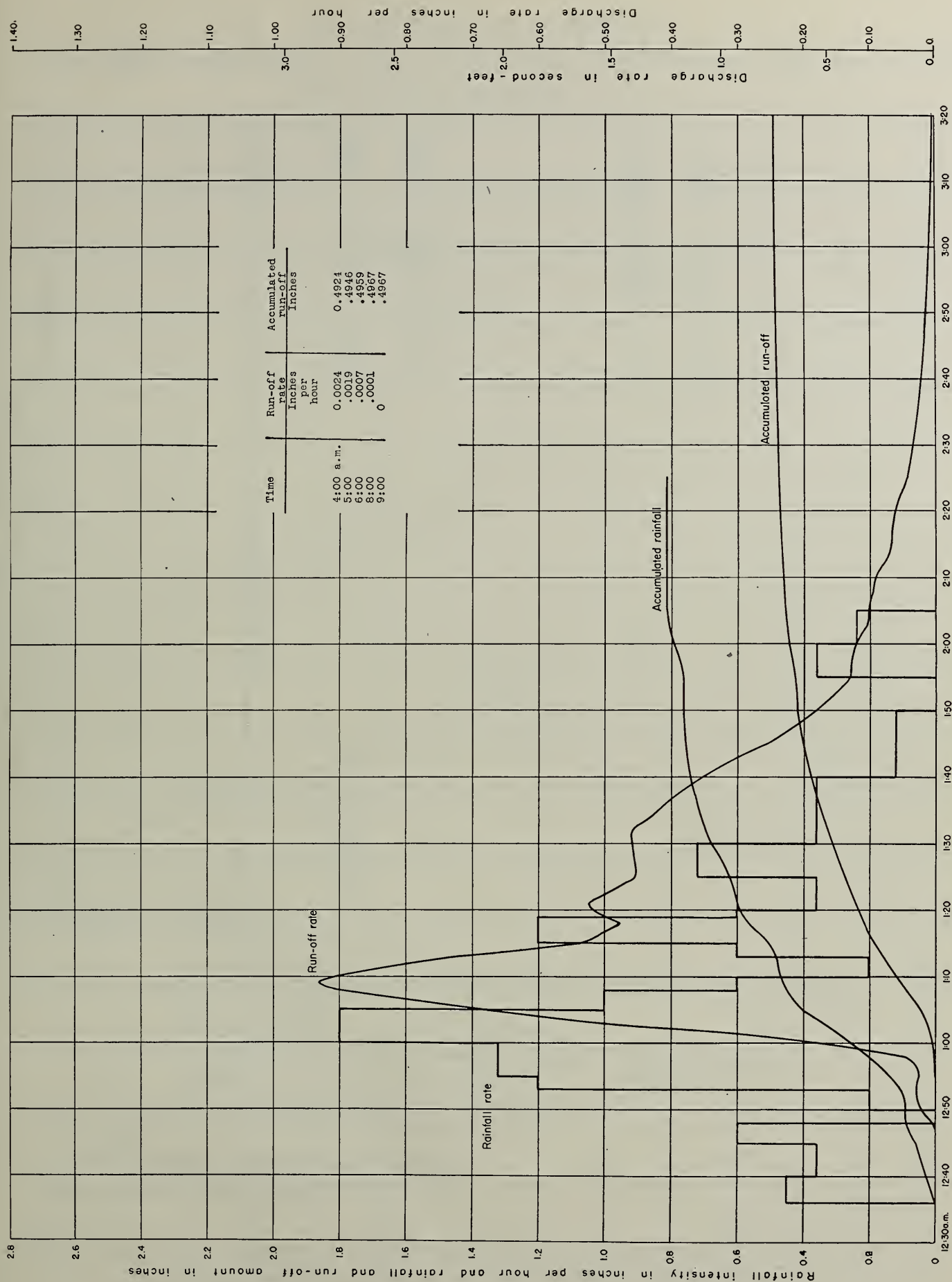


FIGURE 39.—Rainfall and run-off for watershed 14, May 20, 1939.

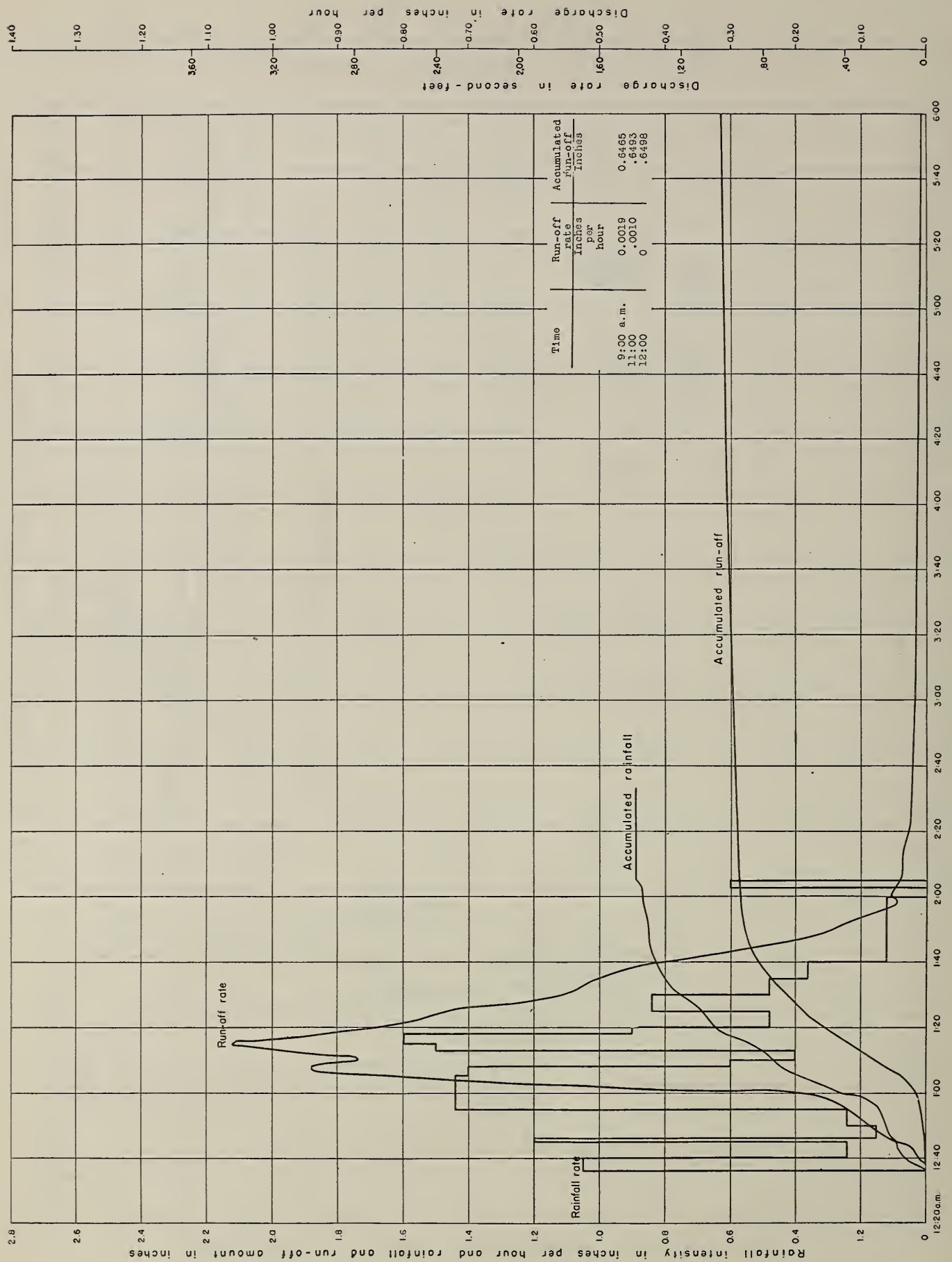


Figure 40.—Rainfall and run-off for watershed 16, May 20, 1939.

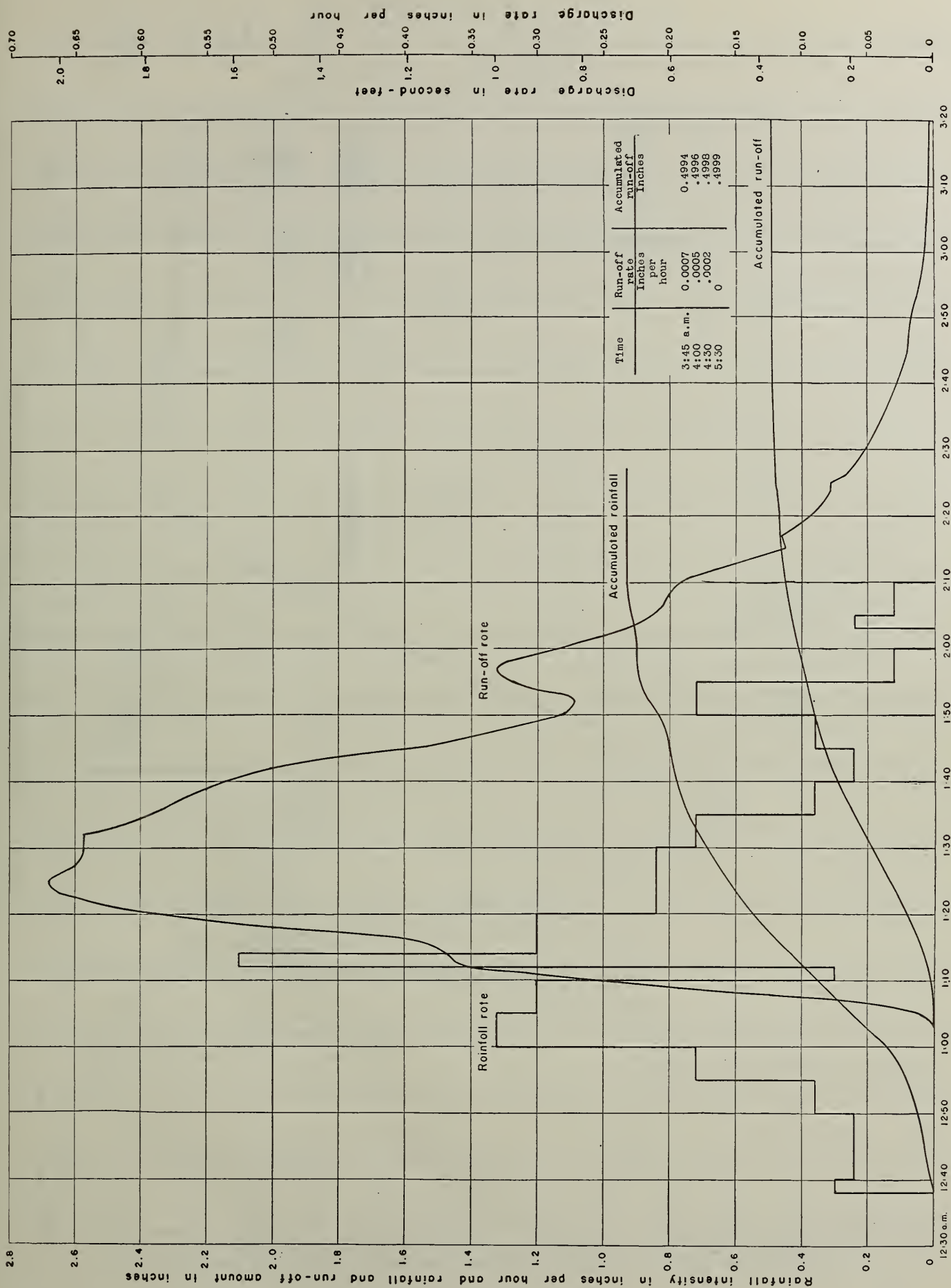


FIGURE 41.—Rainfall and run-off for watershed 17, May 20, 1939.

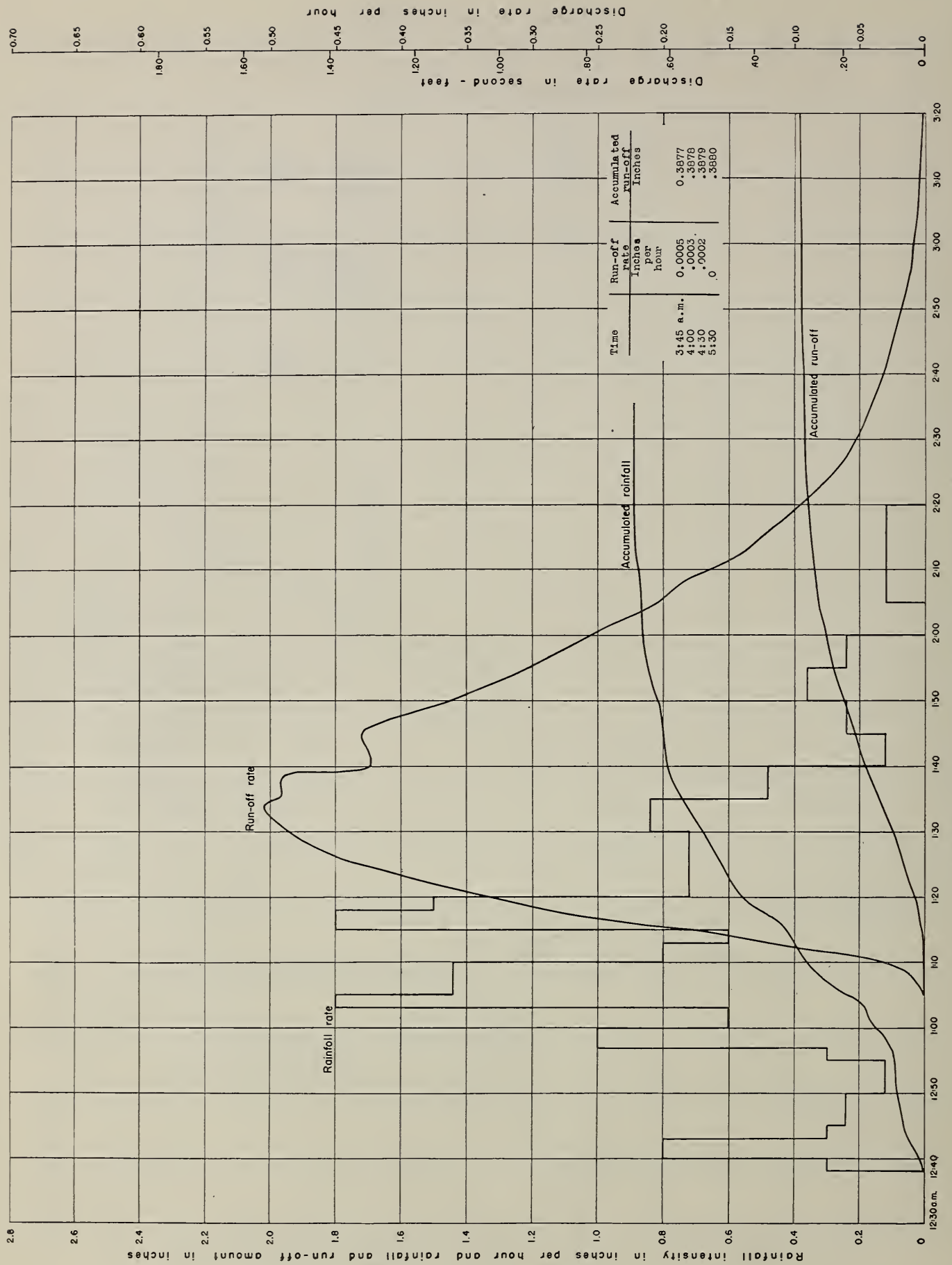


Figure 42.—Rainfall and run-off for watershed 18, May 20, 1939.

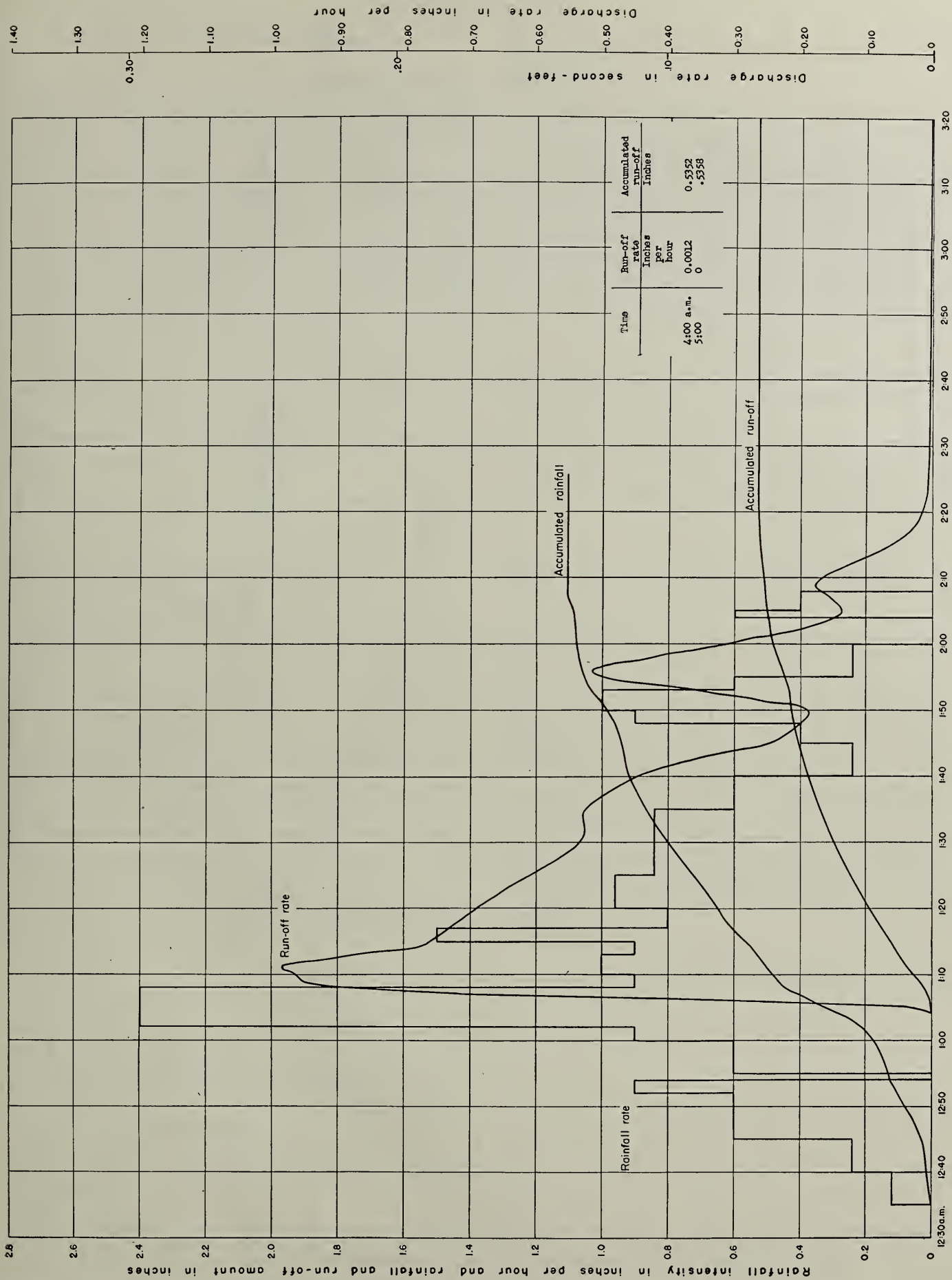


FIGURE 43.—Rainfall and run-off for plot 1, May 20, 1939.

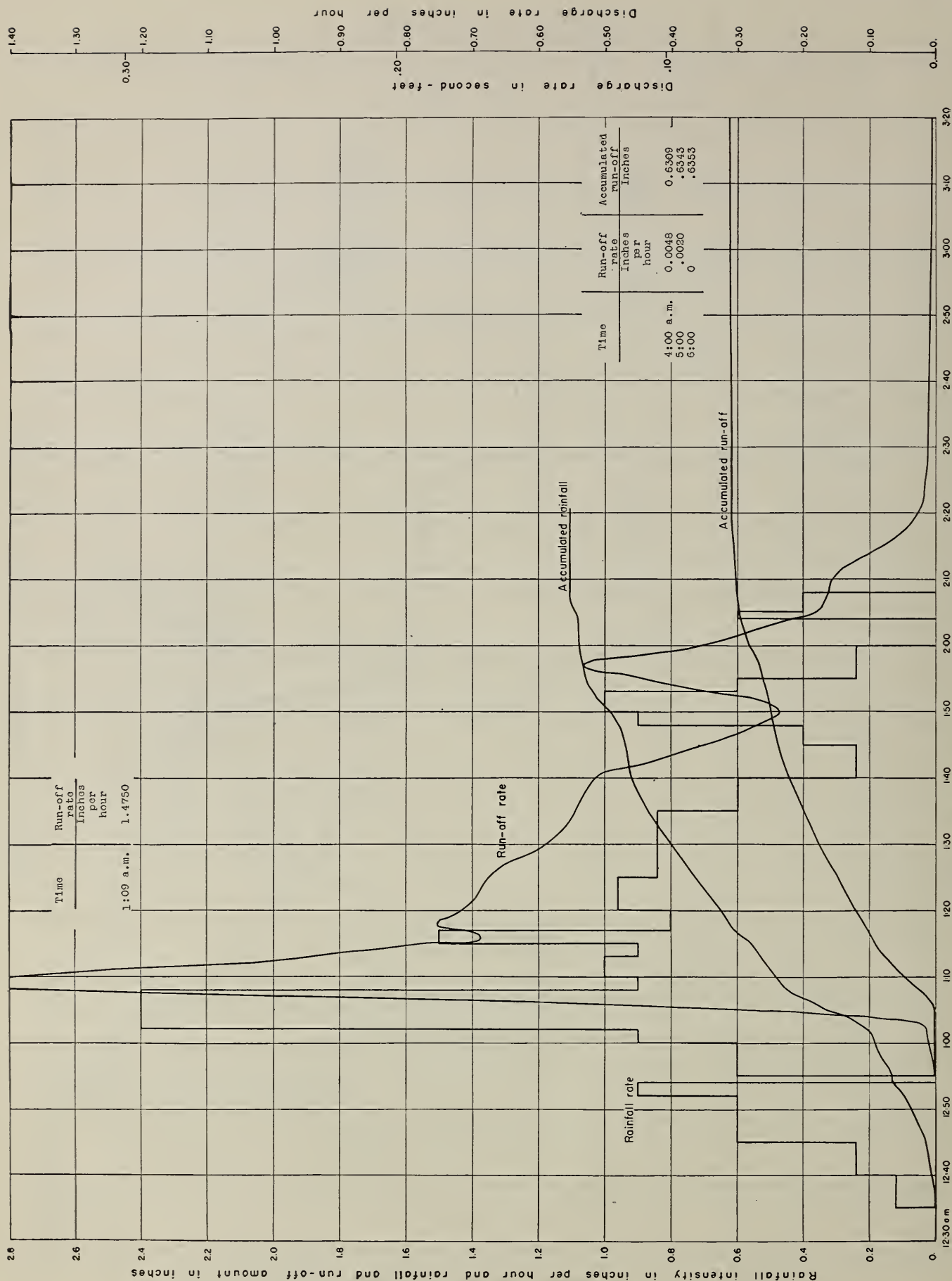


Figure 44.—Rainfall and run-off for plot 3, May 20, 1939.

TABULAR DATA

EXPLANATION OF TABLES

To obviate repeating footnotes numerous times, any needed explanatory material for a series of similar tables is given here. Such material for single tables appears in footnotes to the table.

TABLES 11-30. SUMMARY OF RAINFALL AND RUN-OFF FROM WATERSHEDS

In the note at the head of each table the location, physical characteristics, land use, measurements, and a summary of all the available records are given. The gages from which the amount of rainfall is computed are listed under "precipitation." The amount recorded for watersheds of 20 acres or smaller is that measured at one centrally located gage. That for larger watershed is the Thiessen average of the amounts observed at all the gages listed. The duration of rainfall and the maximum rates are determined from a selected recording gage.

Short periods of no rain within a general rainfall period were deducted to obtain the duration recorded in the tables. The average intensity is the total amount divided by this actual duration.

The time recorded as the time run-off rise began is that at which the stage began to rise significantly. This ordinarily follows or coincides with the beginning of rainfall. In a very few records it precedes the time recorded as beginning of rainfall. This apparent inconsistency generally occurs during the summer months when extremely local showers travel slowly across the watershed causing run-off at the gaging station 1 to 2 minutes before the collection of rainfall in the rain gage.

The total amount of run-off for each rain period from watersheds of less than 20 acres is that resulting from the rainfall for this period entered in column 4. The total run-off for watersheds J, Y, W1, and W2 is that which occurred between the time shown in columns 9 and 10, and does not necessarily represent the exact

quantity of run-off resulting from the rain entered in column 4.

TABLES 36-54. RUN-OFF FOR SELECTED STORMS

These tables give for each watershed the run-off rates and the amounts for each of the greatest storms in sufficient detail to accurately reproduce the hydrograph. No attempt has been made to terminate these tables at the actual end of surface run-off; they have been carried considerably beyond the point where base flow is resumed, in order that those using the record would have access to all available details.

TABLES

TABLE 1.—*Monthly and annual temperature, precipitation, relative humidity, wind movement, and sunshine duration at the central meteorological station, 1938-39*¹

Month	Temperature ²			Total precipitation	Average relative humidity ³	Average wind velocity ⁴	Sunshine duration ⁵
	Maximum	Minimum	Mean				
1938	°F.	°F.	°F.	Inches	Percent	Miles per hour	Percent
October ⁶	99	38	72	0.14	38	3.8	-----
November.....	89	22	56	.96	46	7.0	-----
December.....	80	21	50	2.71	54	5.8	59
1939							
January.....	76	28	51	3.80	86	5.9	52
February.....	78	21	48	2.90	75	6.7	59
March.....	84	32	60	1.16	60	5.8	68
April.....	92	37	66	.78	56	6.4	62
May.....	94	56	75	4.90	65	3.2	57
June.....	96	63	80	2.75	69	4.8	66
July.....	104	68	85	.30	56	5.2	81
August.....	102	68	84	2.26	61	4.1	74
September.....	104	52	82	.73	54	4.6	84
October.....	94	37	71	1.73	56	5.1	69
November.....	82	33	54	2.21	71	4.6	42
December.....	81	23	53	.92	66	5.0	68
Year 1939.....	104	21	68	24.44	65	5.1	65

¹ For evaporation data see table 2.

² Maximum and minimum temperatures are instantaneous extremes for the indicated month or year. Mean temperature is the average of the mean for each day, which is the arithmetic average of the maximum and minimum for each day.

³ October and November 1938 data are obtained from 12 m. observations; other data are the average of the 8 a. m. and 5 p. m. observations.

⁴ Total wind movement obtained from the low anemometer.

⁵ Total hours of sunshine divided by the maximum hours of possible duration for this locality.

⁶ Records began Oct. 1, 1938.

TABLE 2.—Monthly and annual evaporation, wind movement, and relative humidity at the central meteorological station, 1938–39

Month and year	Wind movement from 5 p. m. to 8 a. m. ¹		Night evaporation (5 p. m. to 8 a. m.)						Wind movement from 8 a. m. to 5 p. m. ¹		Day evaporation (8 a. m. to 5 p. m.)						5 p. m. to 5 p. m.					
			Weather Bureau class A pan ²		Colorado pan ³		Bureau of Plant Industry pan ⁴				Weather Bureau class A pan ²		Colorado pan ³		Bureau of Plant Industry pan ⁴		Evaporation			Average wind velocity	Average relative humidity	
	Total	Average velocity	Water temperature at 8 a. m.	Evaporation	Water temperature at 8 a. m.	Evaporation	Water temperature at 8 a. m.	Evaporation	Total	Average velocity	Water temperature at 5 p. m.	Evaporation	Water temperature at 5 p. m.	Evaporation	Water temperature at 5 p. m.	Evaporation	Weather Bureau class A pan ²	Colorado pan ³	Bureau of Plant Industry pan ⁴			
	Miles	Miles per hr.	° F.	In.	° F.	In.	In.	In.	Miles	Miles per hr.	° F.	In.	° F.	In.	° F.	In.	In.	In.	In.	Miles per hr.	Pct.	
1938																						
October																	10.12	10.17		3.8	38	
November																	7.03			7.0	46	
December	2,796	4.5	42	1.90	48	2.69			1,559	6.6	57	2.12	54	1.90			4.01	4.59		5.8	54	
1939																						
January	2,148	4.6	44	1.72	49	1.63			2,262	8.1	58	2.07	55	1.75			3.79	3.38		5.9	86	
February	2,560	6.1	42	1.96	48	2.36	47	2.01	1,939	7.7	57	2.06	54	1.72	53	1.19	4.02	4.09	3.20	6.7	75	
March	2,268	4.9	51	3.40	56	3.18	56	2.87	2,040	7.3	71	3.80	66	2.83	65	2.32	7.20	6.01	5.19	5.8	60	
April	2,586	5.7	57	4.76	63	4.89	63	4.78	2,005	7.4	79	5.76	73	3.61	72	2.66	10.52	8.50	7.44	6.4	56	
May	1,283	3.2	68	4.58	72	4.42	72	4.47	1,119	4.6	87	5.82	82	3.52	81	2.59	10.40	7.94	7.06	3.2	65	
June	1,949	4.3	75	4.47	78	5.10	78	4.80	1,527	5.6	90	6.38	86	3.93	86	2.68	10.85	9.04	7.48	4.8	69	
July	2,102	4.5	76	6.66	80	7.51	79	6.56	1,788	6.4	94	7.90	89	5.78	88	4.27	14.56	13.28	10.83	5.2	56	
August	1,680	3.6	75	5.33	78	5.93	78	5.90	1,353	4.8	94	6.77	89	4.93	87	3.67	12.10	10.86	9.57	4.1	61	
September	1,745	3.9	71	5.91	75	6.38	75	6.03	1,567	5.8	89	7.27	84	5.71	83	3.81	13.13	12.09	9.84	4.6	54	
October	1,968	4.2	61	4.17	66	4.46	65	4.06	1,814	6.5	79	5.12	75	4.22	73	3.08	9.29	8.68	7.14	5.1	56	
November	1,757	3.9	47	2.07	53	2.26	52	2.15	1,556	5.8	61	2.20	59	1.84	57	1.05	4.27	4.10	3.20	4.6	71	
December	1,961	4.2	45	2.08	50	2.32	50	1.90	1,782	6.4	61	2.61	58	2.13	57	1.61	4.69	4.45	3.51	5.0	66	
Year 1939	24,007	4.4	60	47.11	64	50.44			20,752	6.4	77	57.76	72	41.97			104.87	92.41		5.1	65	

¹ Wind movement is taken from an anemometer 18 inches above the ground at the evaporation pans. Record began Dec. 6, 1938.

² U. S. Weather Bureau type pan, diameter 4 feet and depth 10 inches. Once-daily readings started Oct. 1, 1938, and twice-daily readings started Dec. 1, 1938.

³ Colorado type pan 3 feet deep and 3 feet square. Once-daily readings started Oct. 1, 1938, and twice-daily readings started Dec. 1, 1938.

⁴ Bureau of Plant Industry pan, diameter 6 feet and depth 2 feet. Twice-daily readings started Feb. 1, 1939.

TABLE 3.—Daily and monthly maximum, minimum, and average temperature at the central meteorological station, 1937–39^{1 2}

1937

Day	January			February			March			April			May			June			July			August			September			October			November			December		
	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average			
	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.	°F.				
1																86	65	76	96	68	82	98	75	86	95	65	80	89	53	71	83	57	70	57	48	52
2																88	67	78	96	71	84	100	76	88	87	68	78	89	60	74	82	60	71	61	45	53
3																90	69	80	96	69	82	102	75	89	94	72	83	87	64	76	73	57	65	56	46	51
4																80	64	72	94	72	83	105	75	90	94	71	82	95	60	78	74	50	62	62	47	54
5																89	62	76	96	70	83	104	76	90	93	72	82	95	67	81	72	56	64	49	33	41
6													85	62	74	84	59	72	98	73	86	99	70	84	96	74	85	94	67	80	76	46	61	42	22	32
7													85	57	71	85	65	75	97	73	85	99	74	86	91	72	82	93	70	82	82	62	72	57	27	42
8													88	61	74	89	70	80	96	70	83	100	74	87	90	73	82	89	65	77	76	62	69	49	30	40
9													92	60	76	90	74	82	83	69	76	102	74	88	92	71	82	80	61	70	67	58	62	33	21	27
10													91	66	78	91	71	81	78	71	74	102	76	89	95	73	84	75	57	66	63	54	58	36	28	32
11													89	62	76	90	72	81	87	70	78	102	74	88	88	70	79	79	65	72	70	56	63	43	34	38
12													89	68	78	91	71	81	92	72	82	98	78	88	92	61	76	84	57	70	74	51	62	62	38	50
13													83	66	74	90	72	81	93	72	82	101	72	86	89	58	74	78	57	68	77	51	64	69	57	63
14													82	51	66	91	72	82	94	72	83	100	76	88	89	58	74	64	53	58	74	49	62	68	37	52
15													87	55	71	90	67	78	95	72	84	94	72	83	93	65	79	67	42	54	76	57	66	43	36	40
16													87	55	71	90	65	78	95	73	84	95	72	84	93	65	79	68	47	58	71	36	54	48	41	44
17													88	62	75	92	71	82	95	72	84	98	72	85	91	63	77	72	63	68	47	30	38	57	41	49
18													89	61	75	92	72	82	96	73	84	98	72	85	88	60	74	85	62	74	58	37	48	59	33	46
19													89	61	75	92	72	82	96	74	85	96	72	84	95	63	79	78	47	62	55	26	40	57	36	46
20													89	66	78	91	69	80	96	74	85	94	72	83	98	65	82	77	43	60	42	24	33	55	32	44
21													90	70	80	94	71	82	98	73	86	98	74	86	97	67	82	77	46	62	48	25	36	50	40	45
22													91	70	80	97	73	85	94	73	84	98	74	86	95	66	80	77	43	55	45	28	36	54	43	48
23													92	63	78	99	73	86	97	69	83	99	76	88	93	67	80	66	34	50	38	30	34	58	44	51
24													92	64	78	97	74	86	99	70	84	98	73	86	93	64	78	64	47	64	52	26	39	69	43	56
25													92	65	78	95	72	84	99	72	86	96	70	83	85	64	74	84	49	66	64	33	48	70	54	62
26													90	62	76	96	71	84	101	73	87	98	72	85	79	61	70	84	61	72	64	42	53	67	50	58
27													92	64	78	99	70	84	101	76	88	99	71	85	81	51	66	80	50	65	59	44	52	70	63	66
28													93	67	80	97	74	86	100	74	87	98	72	85	87	50	68	88	50	69	59	28	44	68	58	63
29													92	71	82	97	75	86	99	75	87	98	70	84	88	54	71	89	53	71	65	33	48	68	57	62
30													93	73	83	100	69	84	98	75	86	96	71	84	89	53	71	85	54	70	62	42	52	64	54	59
31													89	68	78	-----	-----	-----	100	76	88	-----	-----	-----	-----	-----	83	54	68	-----	-----	-----	66	58	62	
Mo.													100	59	81	-----	-----	-----	101	68	84	-----	-----	-----	-----	50	78	95	34	68	83	24	54	70	21	49

TABLE 3.—Daily and monthly maximum, minimum, and average temperature at the central meteorological station, 1937-39—Continued

1938

Day	January			February			March			April			May			June			July			August			September			October			November			December		
	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum	Average			
1	65	48	56	53	23	38	65	41	53	66	53	60	82	68	74	91	70	80	94	71	82	100	68	84	98	71	84	99	64	82	84	63	74	74	57	66
2	61	38	50	69	41	55	74	53	64	57	35	48	84	68	76	90	66	78	95	71	83	96	70	83	96	68	82	99	66	82	85	64	74	74	60	67
3	62	38	50	73	51	62	82	53	68	66	34	50	81	68	74	93	68	80	95	67	81	96	72	84	95	70	82	92	64	78	72	54	63	72	42	57
4	57	48	52	72	55	64	87	63	75	77	45	61	82	63	72	87	64	76	96	69	82	94	73	84	96	71	84	93	65	79	76	44	60	69	42	56
5	52	43	48	75	56	66	79	58	68	82	61	72	85	54	70	92	68	80	97	70	84	97	70	84	95	67	81	90	66	78	81	50	66	62	38	50
6	53	43	48	72	58	65	64	36	50	86	67	76	87	58	72	91	69	80	98	71	84	97	72	84	96	70	83	88	62	75	77	40	58	70	38	54
7	51	33	42	68	43	56	69	37	53	78	37	58	78	57	68	91	70	80	97	70	84	98	71	84	96	69	82	90	64	77	46	36	41	67	40	54
8	47	30	38	71	50	60	63	48	56	39	32	36	67	44	56	85	66	76	95	71	83	98	70	84	97	69	83	93	63	78	57	30	44	71	36	54
9	45	38	42	78	58	68	73	47	60	56	33	44	75	48	62	84	64	74	96	70	83	98	72	85	98	70	84	89	64	76	60	35	48	64	36	50
10	44	40	42	75	56	66	69	40	54	67	34	50	73	56	64	91	74	82	96	72	84	95	72	84	92	69	80	88	64	76	72	40	56	80	50	65
11	62	38	50	78	58	68	75	43	59	78	45	62	78	50	64	92	73	82	96	73	84	93	72	82	81	72	76	86	57	72	78	55	66	78	56	67
12	57	39	48	77	61	69	78	52	65	81	48	64	82	57	70	92	69	80	97	70	84	96	72	84	94	73	84	88	62	75	82	61	72	50	43	46
13	49	33	41	75	61	68	82	62	72	79	56	86	81	59	70	92	69	80	96	70	83	94	72	83	94	73	84	90	62	76	71	57	64	52	42	47
14	63	37	50	74	63	68	81	65	73	72	63	88	78	64	71	92	68	80	98	70	84	94	74	84	96	73	84	91	64	78	71	47	59	58	29	44
15	65	34	50	74	60	67	79	58	68	70	56	63	80	62	71	92	68	80	98	71	84	99	73	86	88	60	74	91	64	78	68	59	64	60	28	44
16	70	45	58	69	62	66	76	54	65	84	62	73	80	64	72	90	68	79	96	71	84	98	78	88	83	54	69	81	58	74	89	63	76	68	32	50
17	71	50	60	73	65	64	81	50	66	77	64	70	87	65	76	82	64	73	97	71	84	97	69	83	89	63	76	86	65	76	86	67	76	57	39	48
18	80	44	62	56	36	46	79	50	64	80	62	71	88	72	80	90	70	80	91	76	84	97	70	84	88	58	73	74	68	71	61	56	58	59	29	44
19	76	43	60	48	30	39	74	50	62	76	62	69	83	72	78	90	72	81	82	70	76	97	69	83	86	52	69	81	66	74	64	34	49	69	35	52
20	70	60	65	48	31	40	84	49	66	79	55	67	90	72	81	92	72	82	90	70	80	97	70	84	85	54	70	69	51	74	72	40	56	76	43	60
21	67	53	60	46	34	40	84	65	74	81	60	70	88	67	78	90	71	80	84	72	78	99	69	84	84	46	65	82	44	63	77	46	62	53	40	46
22	55	48	52	48	32	40	80	60	70	74	55	64	88	71	81	91	70	80	80	71	76	98	70	84	90	50	70	79	54	66	54	40	47	60	46	53
23	64	52	58	55	33	44	69	55	62	76	55	66	82	63	72	92	72	82	79	71	75	98	71	84	91	58	74	60	43	52	41	34	38	54	43	48
24	57	43	50	54	38	46	79	53	66	73	64	68	80	59	70	91	70	80	86	71	78	100	70	85	91	59	75	73	38	56	44	24	34	50	40	45
25	48	32	40	58	41	50	86	66	76	79	62	70	85	57	71	93	72	82	85	72	78	100	71	86	93	59	76	82	44	63	50	23	36	46	44	45
26	50	31	40	71	40	56	82	64	73	77	64	70	85	62	74	93	71	82	92	72	82	100	68	84	95	60	78	85	50	68	51	30	40	55	40	48
27	64	31	48	76	45	60	76	57	66	76	62	69	87	61	74	94	71	82	94	72	83	100	70	85	98	64	81	88	57	72	52	22	37	35	23	29
28	67	38	52	71	54	62	76	57	66	82	64	73	90	64	77	92	70	81	97	72	84	94	68	81	96	62	79	90	62	76	62	32	47	42	21	22
29	63	51	57				81	49	65	82	63	72	91	68	80	93	74	84	95	73	84	92	72	82	97	61	79	90	60	75	64	33	54	60	40	50
30	65	35	50				82	70	76	82	62	72	90	69	80	92	67	80	94	72	83	99	73	86	96	60	78	86	54	70	69	50	60	52	36	44
31	40	20	30				75	57	66				91	69	80			98	70	84	100	71	86				88	59	74				58	34	46	
Mo.	80	20	50	78	23	56	87	36	65	86	32	64	91	44	72	94	64	80	98	67	82	100	68	84	98	52	78	99	38	72	89	22	56	80	21	50

1939

1	67	34	50	66	53	60	51	38	44	86	52	69	84	56	70	89	65	77	94	70	82	94	73	84	104	74	89	78	49	64	82	48	65	69	44	56
2	73	39	56	54	36	45	54	32	43	92	62	77	86	63	74	80	63	72	96	73	84	92	72	82	104	76	90	82	50	64	77	50	64	64	45	54
3	76	58	67	46	32	39	66	37	52	85	69	77	83	58	70	82	70	76	97	76	86	98	75	86	102	76	89	88	58	73	50	41	46	70	41	56
4	72	54	63	53	28	40	80	57	68	85	64	74	78	56	67	80	69	74	97	75	86	91	74	82	99	75	87	88	67	78	61	38	50	73	43	58
5	66	42	54	57	40	48	72	58	65	83	50	66	82	60	71	82	70	76	98	74	86	94	71	82	98	74	86	91	71	81	66	37	52	74	42	58
6	69	39	54	65	42	54	63	44	54	56	40	48	86	57	72	86	69	78	99	68	84	95	69	82	97	71	84	94	73	84	70	42	56	78	44	61
7	67	47	57	73	38	56	60	44	52	58	37	48	80	59	70	88	68	78	100	70	85	97	75	86	97	73	85	92	72	82	76	55	66	79	46	62
8	70	61	66	67	45	56	74	44	59	78	38	58	81	59	70	88	68	78	104	71	88	90	78	84	95	72	84	86	69	78	76	52	66	78	48	63
9	66	52	59	78	49	64	76	63	70	85	53	69	84	56	70	92	70	81	99	78	88	96	74	85	93	71	82	92	73	82	78	56	67	77	51	64
10	64	43	54	53	37	45	84	64	74	85	65	75	94	58	76	96	71	84	94	75	84	96	70	83	89	70	80	73	58	66	69	52	60	79	54	66
11	52	44	48	54	24	39	82	63	72	74	53	64	94	66	80	92	72	82	89	74	82	98	73	86	92	68	80	70	54	62	55	45	50	81	48	64
12	47	43	45	65	34	50	72	49	60	73	44	58	90	66	78	92	73	82	84	74	79	97	74	86	94	71	82	77	59	68	58	44	51	77	54	66
13	54	37	46	72	41	56	76	42	59	75	54	64	75	64	70	91	71	81	92	69	80	100	77	88	95	71	83	81	58	70	63	42	52	63	42	56
14	56	38	52	66	46	56	78	49	64	82	64	73	79	61	70	96	68	82	96	74	85	101	74	88	93	71	82	82	53	68	59	46	52	64	33	48
15	46	36	41	64	35	50	58	41	50	81	69	75	88	58	73	94	70	82	98	75	86	101	72	86	96	71	84	75	48	62	55	51	53	67	52	60
16	50	28	39	70	43	56	64	36	50	75	56	66	82	62	72	96	66	81	98	76	87	99	74	86	95	72	84	81	50	66	60	51	56	74	42	58
17	54	39	46	59	32	46	66	40	53	69	52	60	80	61	70	95	73	84	96	73	84	99	74	86	93	71	82	82	55	68	63	55	59	70	49	60
18	57	32	46	50	38	44	73	46	60	66	44	55	88	64	76	92	77	84	96	74	85	99	73	86	91	68	80	82	54	68	62	52	57	73	52	62
19	64	34	49	66	48	57	76	44	60	74	43	58	86	65	76	81	67	74	96	72	84	102	76	89	93	68	80	84	54	69	72	47	60	61	49	55
20	70	38	54	56	28	42	76	49	62	92	53	72	87	65	76	87	71	79	99	75	87	94	72	83	95	70	82	86	59	72	67	42	54	66	29	48
21	71	43	57	38	21	30	80	54	67	72	49	60	89	70	80	88	74	81	100	76	88	91	70	80	93	64	78	88	61	74	67	39	53	75	40	58
22	59	43	51	51	24	38	81	52	66	79	50	64	90	69	80	88	73	80	101	74	88	94	73	84	94	59	76	94	61	78	70	42	56	64	55	60
23	50	39	44	60	27	44	76	50	63	82	51	66	91	72	82	90	72	81	96	75	86	92	69	80	94	65	80	89	59	74	72	44	58	64	40	52
24	55	37	48	60	49	54	76	59	68	82	58	70	89	68	78	92	71	82	97	74	86	95	72	84	95	64	80	81	68	74	65	45	55	44	32	38
25	57	37	47	60	36	48	74	54	64	87	57	72	88	66	77	92	72	82	97	71	84	95	74	84	94	65	80	83	71	77	49	41	45	43	38	40
26	57	42	50	53	31	42	82	58	70	85	64	74	90	65	78	92	73	82	98	76	87	96	72	84	96	64	80	98	75	82	52	38	45	44	37	40
27	48	34	41	63	50	56	82	56	69	82	63	72	92	71	82	93	73	83	98	75	86	87	72	80	92	63	78	90	63	76	52	38	45	42	28	35
28	58	42	50	54	32	43	78	50	64	86	60	75	89	68	78	94	72	83	100	77	88	94	68	81	95	71	83	69	51	60	55	33	44	37	30	34
29	57	44	50	-----	-----	-----	50	43	46	77	54	66	88	68	78	96	72	84	94	75	84	96	70	83	95	59	77	74	45	60	52	45	48	42	23	32
30	62	32	47	-----	-----	-----	66	40	53	80	53	66	87	63	75	93	71	82	95	74	84	98	71	84	74	52	63	66	46	56	57	46	52	57	26	42
31	70	43	56	-----	-----	-----	84	45	64	-----	-----	-----	88	67	78	-----	-----	-----	96	73	84	102	72	87	-----	-----	-----	72	37	54	-----	-----	-----	69	34	52
Mo.	76	28	51	78	21	48	84	32	60	92	37	66	94	56	75	96	63	80	104	68	85	102	68	84	104	52	82	94	37	71	82	33	54	81	23	53

TABLE 4.—Daily rainfall ¹ at selected recording stations,² 1936-39

Date		Station No. —																																			
		2	5	14	27	31	44	55	56	66	69a	70	82	85	94	107	W-2	W-2a	W-3a	W-4a	W-7 ³	W-9 ³															
1936																																					
September:		Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches															
6		0.07	0.18	0.31	2.67	3.24	{	3.09	{	2.58	{	{	{	{	{	{	{	{	{	{	{																
14		.85	.91	.95																																	
15		.61	.65	.45																																	
16		.13	.18	.25																																	
24		3.03	3.01	2.71	{	{	{	{	{	{	{	{	{	{	{	{	{	{	{	{	{																
25																																					
26																																					
27																																					
October:																																					
7		.44	.39	.40	.41	.37	0.41	.47	0.41	.39							0.38				0.40																
23		3.81	1.48	3.39	1.31	3.85	1.32	1.37	3.80	1.33	{	{	{	{	{	{	{	{	{	{	{																
24			1.59		2.13		2.07	2.14		0.43												0.53	0.47	0.32	0.36	0.38	0.36										
25			.50		.51		.40	.43		.53												.47	.43	.53	.47	.43	.53	.47	.43	.53	.47	.43	.53	.47	.43		
27			.04		.06		.05	.05		.09												.08	.14	.08	.14	.08	.14	.08	.14	.08	.14	.08	.14	.08	.14		
28		.18	.12	.13	.29	.23	.15	.28	.28	.14						.31				.30																	
29		.00	.02	.04		.02	.04		.04																												
Total		4.50	4.18	4.50	4.47	4.51	4.53	4.79	4.49	4.45							3.97				4.36																
November:																																					
3		.65	.53	.58	.57	.50	.61	.49	.63	.50							.67				.74																
10		1.40	.05	.04	.05	1.32	.02	1.24	.00	.02							.00				.00																
23		3.35	1.34	1.40	1.28	3.39	1.20	1.24	1.29	1.24	{	{	{	{	{	{	{	{	{	{	{																
25			.24	.20	.20		.18	.24	.00	.22												1.18	1.18	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22					
28			.24	.20	.20		.18	.24	.00	.22												.37	.36	.36	.36	.36	.36	.36	.36	.36	.36	.36	.36				
29			.11	.10	.10		.10	.14	.37	.10																							.34				
Total		2.40	2.27	2.32	2.20	2.21	2.11	2.11	2.29	2.08							2.27				2.30																
December:																																					
2		1.14	1.11	1.10	1.15	1.14	1.14	1.13	1.15	1.11					1.18	1.17	1.18				1.12																
5		1.74	.40	.37	.32	1.47	.33	.36	1.50	.34					1.49	1.55	1.39	{	{	{	{																
6		1.26	1.48	1.25	1.04	1.15	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10					1.10	1.10	1.10													
25		1.54	.02	.02	.05	.04	.04	.04	.00	.02	{	{	{	{	{	{	{					{	{	{													
27		1.40	1.24	1.28	1.45	1.46	1.47	1.56	1.44	1.36															1.27	1.34	.05	.00	1.32	1.22	1.22	1.22	1.22	1.22			
29		.05	.04	.04	.02	.05	.03	.06	.10	.05	.11	.06	.07	.04	.07	.07	.07				.07																
Total		4.47	4.23	4.25	4.07	4.15	4.04	4.21	4.31	4.06					4.08	4.13	3.86				3.87																
1937																																					
January:																																					
1		.06	.05	.05	.09	.55	.03	.08	.58	.14	{	{	{	{	{	{	{	{	{	{	{																
2		.03					.04	.01		.42												.62	.92	.55	.06	.57											
7		.61					.48	.58		.51												.50	.45	.64	.31	.45	.57	.57	.57	.57	.57	.57	.57	.57	.57	.57	
8		.33					.34	.45		.46												.70	.53	.64	.18	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	.12	
11		1.87	1.66	1.38	.39	1.91	.21	.29	2.25	.35	1.97	{	{	{	{	{	{	{	{	{	{																
12							1.20	1.17		1.00												1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	
13							.12	.04		.04												.03	.07	.06	.06	.06	.06	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
14							.06	.05		.04												.06	.07	.06	.06	.09	.06	.05	.08	.08	.08	.08	.08	.08	.08	.08	.08
17		.07	.08	.08	.07	.07	.07	.07	.09	.07	.10	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07																
19		.06	.04	.06	.04	.04	.04	.06	.05	.04	.05	.04	.05	.04	.05	.04	.05	.05	.05	.05	.05																
20		.28	.22	.23	.19	.20	.22	.16	.20	.16	.20	.16	.20	.16	.20	.16	.20	.16	.20	.16	.20																
21		.08	.06	.06	.07	.02	.04	.02	.04	.02	.04	.02	.04	.02	.04	.02	.04	.02	.04	.02	.04																
24		.21	.18	.21	.15	.18	.14	.14	.24	.10	.10	.15	.13	.19	.08	.08	.08	.08	.08	.08	.08																
27		.24	.19	.23	.23	.18	.18	.23	.27	.24	.27	.28	.32	.29	.29	.29	.29	.29	.29	.29	.29																
30		.06	.04	.02	.02	.02	.02	.04	.06	.03	.00	.00	.32	.03	.00	.00	.00	.00	.00	.00	.00																
Total		4.02	3.44	3.64	3.46	3.39	3.32	3.20	3.87	3.35	3.45	3.61		3.77		3.63				3.38																	
February:																																					
1		.28	.24	.28	.27	.26	.21	.23	.27	.24	.28	.27		.30	.32	.31				.25																	
2		.05	.06	.04	.05	.03	.07	.07	.03	.06	.04	.07		.05	.05	.06				.07																	
19		.21	.18	.15	.14	.12	.10	.14	.15	.14	.15	.13	0.11	.12	.12	.14				.13																	
20		.05	.04	.04	.03	.05	.04	.08	.08	.06	.05	.03	.02	.03	.00	.03				T																	
26		.03	.00	.05	.00	.05	.00	.00	.05	.00	.04	.03	.00	.00	.04	.03				.03																	
27		.03	.04	.04	.04	.01	.06	.06	.04	.04	.03	.02	.02	.08	.02	.01				.01																	
Total		.65	.56	.60	.53	.52	.48	.58	.62	.54	.59	.55		.58	.50	.58				.49																	
March:																																					
3		.13	.19	.13	.17	.17	.14	.25	.21	.24	.23	.27	.29	.29	.29	.29				.28																	
4		1.62	1.37	1.30	1.24	1.40	1.40	1.43	1.27	1.34	1.33	1.40	1.47	1.71	1.19	1.34				1.50																	
5		.37	.37	.38	.03	.02	.07	.07	.06	.27	.15	.08	.08	.12	.04	.06				.05																	
6					.41	.39	.47	.53	.84	.55	.48	.58	.57	.59	.60	.57				.58																	
13		.76	.81	1.43	.97	1.29	.89	1.21	1.34	1.23	1.36	1.74	1.55	1.45	1.36	1.63				1.41																	
14		.26	.28	.23	.25	.22	.16	.16	.20	.19	.19	.23	.22	.26	.31	.26				.31																	
19		.22	.23	.16	.17	.16	.19	.21	.23	.21	.19	.19	.19	.21	.16	.19				.20																	
22		.13	.02	.02	.02	.02	.04	.02	.02	.02	.05	.03	.02	.03	.00	.00				.03																	
23			.06	.08	.07	.08	.02	.08	.02	.08		.02	.05	.04	.02	T	.04	.03			.03																
26			.07	.07	.08	.10	.09	.10	.12	.18		.12	.12	.14	.12	.15	.12	.13			.07																
29			.14	.15	.17	.18	.15	.17	.20			.22	.19	.21	.24	.29	.26	.25			.30																
30		.11	.10	.10	.11	.10	.10	.09	.32	.09	.13	.15	.09	.10	.11	.14				.11																	
Total		3.81	3.65	4.08		4.08	3.81	4.31	4.75	4.50	4.42	5.07	4.88	5.22	4.44	4.90				4.87																	
April:																																					
3		.46	.56	.40	.57	.93	.55	.67	.75	.58	.67	.62	.73	.70	.73	.58				.55	0.62																
7		.00	.02	.03	.04	.05	.00	.04	.03	.02	.00	.02	.00	T	.00	.02				.00	T																
21		.59	.64	.58	.62	.57	.52	.61	.51	.50	.44	.49	.50	.49	.42	.50				.52	.53																
24		.18	.15	.11	.08	.11	.12	.13	.21	.25	.29	.30	.30	.26	.18	.30				.27	.28																
Total		1.23	1.37	1.12	1.31	1.66	1.19	1.45	1.50	1.35	1.40	1.43	1.53	1.45	1.33	1.40				1.34	1.43																

See footnotes at end of table.

TABLE 4.—Daily rainfall ¹ at selected recording stations,² 1936-39—Continued

Date	Station No. —																					
	2	5	14	27	31	44	55	56	66	69a	70	82	85	94	107	W-2	W-2a	W-3a	W-4a	W-7 ³	W-9 ³	
1937																						
May:	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	
4	.39	.40	.45	.44	.46	.43	.50	.42	.46		.41	.32	.33	.32	.28	.25				.29	.25	
10	.12	.09	.08	.16	.19	.10	.14	.06	.12		.11	.04	.04	.03	.00	.00				.00	.00	
13	.24	.21	.18	.23	.27	.19	.16	.17	.16		.15	.25	.18	.17	.15	.25				.21	.16	
31	.23	.25	.21	.27	.27	.42	.36	.58	.55		.86	.86	.84	.70	.73	.86				.90	1.02	
Total	.98	.95	.92	1.10	1.19	1.14	1.16	1.23	1.29		1.53	1.47	1.39	1.22	1.16	1.36				1.40	1.43	
June:																						
3	.05	.05	.11	.13	.45	.20	.27	.22	.34		.22	.31	.24	.31	.28	.23				.28	.28	
4	.69	.68	.70	.75	.78	.70	.72	.86	.73		.77	.85	.83	.79	.74	.90				.85	.78	
6	.81	.88	.90	1.53	1.76	1.70	2.62	1.80	2.52		2.15	2.31	2.26	2.09	1.70	1.86				1.78	1.80	
7	.10	.12	.21	.32	.21	.42	.30	.45	.58		.47	.43	.36	.40	.27	.44				.40	.30	
16	.75	.77	.70	.86	.71	.67	.42	.53	.32		.41	.34	.30	.40	.44	.35				.32	.35	
19	.04	.03	.03	T	.04	.02	.04	.02	.08		.02	.05	.07	.10	.23	.17				.47	.51	
Total	2.44	2.53	2.65	3.59	3.95	3.71	4.37	3.88	4.57		4.04	4.29	4.06	4.09	3.66	3.95				4.10	4.03	
July:																						
9	.40	.46	.38	.35	.42	.30	.47	.65	.33		.37	.35	.47	.37	.39	.23				.55	.48	
10	.85	.80	.65	.70	.80	.76	.67	.58	.63		.73	.59	.51	.60	.51	1.00				.53	.51	
11	.20	.20	.07	.06	.04	.04	.04	.06	.04		.03	.05	.04	.01	.02	.09				.04	.00	
22	.04	.06	.13	.09	.10	.00	.03	.03	.00		.01	.06	.00	.03	.00	.05				.04	.00	
Total	1.49	1.52	1.23	1.20	1.36	1.10	1.21	1.32	1.00		1.14	1.05	1.02	1.01	.92	1.37				1.16	.99	
August:																						
5	.02	.03	.02	.04	.08	.12	.12	.14	.14		.21	.24	.26	.13	.08	.26				.31	.32	
15	.13	.11	.30	.16	.07	.26	.12	.33	.21		.25	.26	.18	.21	.23	.16				.25	.35	
16	.00	.00	.00	.00	.00	.00	.00	.03	.02		.01	.00	.00	.04	.00	.00				.00	.00	
18	.37	.35	.00	.00	.25	.02	.04	.00	.00		.00	.00	.01	.01	.04	.00				.00	.00	
24	1.24	1.21	.28	.57	.89	.50	.41	.42	.63		.37	.29	.59	.70	1.38	.14				.12	.10	
28	.00	.00	.00	0.0	.01	.00	.08	.08	.08		.10	.00	1.28	.00	.06	.00				.00	.00	
30	.00	.00	.00	.00	.00	.00	.00	.00	.04		.19	.12	.02	.00	.00	.16				.35	.16	
31	.00	.00	.00	.00	.00	.00	.00	.02	.02		.00	.02	.02	.02	.11	.03				.04	.03	
Total	1.76	1.70	.60	.77	1.30	.90	.77	1.02	1.14		1.13	.93	1.34	1.11	1.90	.75				1.07	.96	
September:																						
2	.22	.20	.59	.64	.64	.82	.59	.99	.62		1.00	1.22	1.03	.79	1.07	1.14				1.22	1.22	
6	.54	.73	1.27	.88	.70	1.00	1.31	1.13	.80		.43	1.05	.59	.90	.85	2.58				2.21	1.36	
7	.60	.30	.03	.04	.70	.22	1.33	.42	.98		.97	.79	.23	.13	.33	.14				.27	.30	
11	.03	.02	.00	.00	.02	.05	0.0	.14	.00		.10	.31	.00	.00	.08	.29				.30	.28	
Total	1.39	1.25	1.89	1.56	1.36	2.09	3.23	2.68	2.40		2.50	3.37	1.84	1.82	2.33	4.15				4.00	3.16	
October:																						
9	.27	.24	.25	.26	.23	.25	.26	.31	.28		.32	.35	.34	.33	.37	.36				.37	.38	
13	1.60	1.58	1.76	1.80	1.73	1.67	1.54	1.66	1.59		1.60	1.61	1.60	1.59	1.55	1.60				1.58	1.57	
14	.03	.00	.00	.00	.00	.00	.00	.00	.00		.00	.03	.00	.00	.00	.02				.00	.00	
16	.11	.12	.14	.21	.20	.28	.35	.35	.33		.32	.31	.30	.30	.24	.29				.29	.25	
17	.74	.70	.77	.73	.88	.82	.67	.78	.74		.76	.68	.71	.65	.61	.57				.63	.63	
Total	2.75	2.64	2.92	3.00	3.04	3.02	2.82	3.10	2.94		3.00	2.98	2.95	2.87	2.77	2.84				2.87	2.83	
November:																						
5	.08	.08	.09	.09	.09	.09	.10	.15	.08		.12	.10	.14	.13	.10	.10				.12	.10	
8	.27	.28	.30	.28	.22	.22	.24	.25	.25		.21	.19	.18	.18	.20	.21				.19	.16	
9	1.78	1.97	2.00	2.14	2.18	2.44	2.94	2.56	2.82		2.66	2.73	3.10	3.32	2.97	2.92				3.08	3.43	
22	.25	.45	.49	.49	.55	.35	.45	.15	.33		.40	.16	.37	.58	.46	.10				.40	.56	
Total	2.38	2.78	2.88	3.00	3.04	3.10	3.49	3.10	3.48		3.39	3.18	3.79	4.21	3.73	3.33				3.79	4.25	
December:																						
1	.15	.12	.05	.04	.11	.06	.00	.00	.00		.02	.03	T	T	.00	.00				.00	.00	
3	.04	.04	.03	.04	.04	T	.07	.05	.05		.00	.05	T	T	.03	.07				.07	.04	
8	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.02	.00	.00	.00				.00	.00	
13	.04	.04	.04	.04	.03	.04	.04	.04	.04		.09	.28	.05	.29	.03	.05				.23	.05	
14	.25	.21	.23	.20	.22	.19	.20	.22	.27		.20	.22	.22	.22	.13	.22				.22	.22	
15	.32	.30	.37	.30	.34	.37	.35	.36	.35		.39	.36	.37	.39	.37	.36				.41	.33	
16	1.04	.93	.97	.72	1.07	.95	1.07	.96	1.08		.95	1.01	1.02	.94	1.01	.87				1.16	1.13	
17	.11	.02	.04	.02	.06	.06	.02	.12	.02		.10	.14	.02	.02	.04	.13				.03	.03	
21	.00	.00	.00	.00	.00	.00	.00	.00	.00		.00	.00	.00	.00	.02	.00				.00	.00	
22	1.28	1.19	1.27	1.31	1.22	1.36	1.38	1.35	1.46		1.40	1.40	1.44	1.49	1.43	1.40				1.35	1.50	
23	.10	.07	.02	.00	.13	.00	.00	.12	.00		.09	1.40	.00	.10	.00	.05				.13	.00	
26	.02	.20	.00	.03	.10	.03	.02	.11	.03		.10	.12	.11	.11	.10	.11				.13	.08	
27	.10	.10	.06	.06	.06	.06	.06	.11	.08		.33	.37	.28	.43	.46	.34				.37	.36	
28	.72	.44	.54	.44	.48	.52	.51	.45	.33		.33	.37	.28	.43	.46	.34				.37	.36	
29	.07	.11	.09	.18	.20	.11	.16	.09	.05		.06	.00	.04	.03	.02	.10				.10	.09	
Total	4.24	3.59	3.71	3.38	3.94	3.75	3.88	3.83	3.76		3.76	3.57	3.78	3.73	3.61					3.95	3.83	
Year 1937	27.14	25.98	26.24		28.83	27.61	30.47	30.90	30.32					31.69		31.13	29.82	31.87			32.42	
1938																						
January:																						
5	.11	.13	.12	.11	.15	.15	.17	.69	.16		.65	.18	.12	.15	.16	.18				.17	.15	
6	.49	.46	.48	.53	.48	.54	.49	.50	.50		.49	.52	.51	.49	.47	.47				.49	.47	
9	.17	.17	.16	.18	.18	.20	.19	.26	.20		.24	.19	.19	.21	.17	.19				.17	.17	
10	.02	.01	.02	.03	.02																	

TABLE 4.—Daily rainfall ¹ at selected recording stations, ² 1936-39—Continued

Date	Station No. —																				
	2	5	14	27	31	44	55	56	66	69a	70	82	85	94	107	W-2	W-2a	W-3a	W-4a	W-7 ³	W-9 ³
1938																					
February:	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
16-----	1.23	1.32	1.02	1.10	1.50	1.05	1.75	1.20	1.68	1.39	1.90	1.81	1.76	1.40	1.36	1.65				1.98	1.65
17-----	.03	T	.01	T	T	.02	.02	.58	.02	.51	.02	.50	.52	.02	T	.48				.54	.02
18-----	.62	.62	.61	.66	.54	.56	.46		.48		.51			.68	.84					.75	.55
21-----	.60	.54	.63	.61	.60	.63	.62	.60	.67	.59	.62	.67	.67	.68	.64	.63					
Total-----	2.48	2.48	2.27	2.37	2.64	2.26	2.85	2.38	2.85	2.49	3.05	2.98	2.95	2.78	2.84	2.76				3.27	2.95
March:																					
5-----	.04	.04	.02	.03	.02	.08	.08		.08	.30	.08	.16	.05	.08	.08	.07				.08	.04
8-----	.02	.02	.04	.03	.06	.07	.06	.33	.08		.12	.16	.10	.08	.10	.08				.07	.08
9-----	.14	.14	.13	.17	.15	.14	.14		.14	.06	.17	.19	.15	.16	.14	.15				.15	.10
18-----	.02	.02	.02	.02	.02	.02	.02	.00	.02	.02	.02	.02	.06	.04	.04	.02				.08	.07
22-----	.75	.77	.74	.85	.92	.75	.59	.59	.47	.55	.60	.42	.41	.35	.23	.35				.35	.22
23-----	.01	.03	.02	.03	.02	.03	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00				.00	.00
27-----	1.44	1.46	1.37	1.10	1.73	.87	1.82	.80	1.04	.68	.74	.61	.90	.96	.65	.57				.68	.71
28-----	.83	1.10	1.04	1.00	.94	1.00	.88	1.03	.80	1.05	1.04	1.00	.80	.95	1.02	.90				.93	.85
29-----	.02	.03	.06	.03	.08	.04	.00	T	.00	.05	.06	.05	.06	.05	.04	.06				.00	.05
31-----	.01	T	.04	.02	.03	.05	.00	.00	.00	.02	.03	.00	.00	.07	.06	.01				.00	.02
Total-----	3.28	3.61	3.48	3.28	3.97	3.05	3.62	2.75	2.63	2.73	2.86	2.45	2.53	2.74	2.36	2.21				2.34	2.14
April:																					
1-----	.00	.00	.02	.02	.00	.05	T	.00	T	.02	.02	.02	T	.00	.05	.04				.12	.09
7-----	.73	.67	.66	.63	.56	.65	.76	.76	.73	.74	.66	.68	.75	.79	.74	.62				.72	.69
15-----	2.39	2.56	2.67	2.51	2.19	2.33	2.21	2.08	2.17	2.11	2.33	2.28	2.18	2.24	2.11	2.20			2.14	2.12	2.15
17-----	.10	.08	.08	.10	.12	.11	.17	.15	.17	.13	.16	.17	.13	.14	.13	.13				.13	.11
25-----	.14	.12	.12	.14	.08	.17	.08	.45	.06	.45	.18	.30	.10	.06	.08	.21				.19	.17
26-----	.26	.17	.17	.19	.36	.21	.37	.22	.40	.20	.36	.28	.34	.52	.44	.18				.20	.36
27-----	.37	.32	.29	.28	.25	.30	.33	.33	.29	.27	.30	.26	.32	.25	.25	.24				.26	.25
Total-----	3.99	3.92	4.01	3.87	3.56	3.82	3.92	3.99	3.82	3.92	4.01	3.99	3.86	3.99	3.81	3.62				3.89	3.98
May:																					
4-----	.15	.19	.17	.25	.30	.27	.26	.31	.27	.23	.25	.26	.35	.36	.44	.25	2.25		.28	.28	.34
7-----	.46	.45	.42	.40	.40	.39	.41	.40	.40	.38	.38	.38	.38	.41	.39	.36	.37		.38	.38	.40
10-----	.15	.16	.16	.13	.14	.14	.12	.14	.12	.12	.13	.12	.16	.17	.14	.15	.14		.14	.15	.17
13-----	.49	.48	.56	.57	.50	.64	.48	.65	.55	.68	.68	.67	.76	.67	.77	.61	.73		.63	.69	.67
16-----	.17	.20	.07	.08	.10	.06	.14	.07	.06	.06	.07	.06	.08	.12	.07	.05	.07		.05	.05	.06
17-----	.00	.00	.00	.00	.04	.04	.04	.09	.04	.04	.03	.04	.04	.00	.00	.03	.04		.05	.04	.03
23-----	.90	.84	.95	.92	.87	.85	1.08	.91	1.05	.89	.96	.88	1.03	1.01	.96	.87	.84		.87	.95	.94
Total-----	2.32	2.32	2.33	2.35	2.35	2.39	2.53	2.57	2.49	2.40	2.50	2.41	2.80	2.74	2.77	2.32	2.44		2.40	2.54	2.61
June:																					
4-----	.89	.79	.58	.58	.60	.60	.85	.67	.86	.88	.95	.94	.82	.80	.82	.90	.89		.99	.98	.92
8-----	1.17	1.16	1.10	.88	.77	.92	.53	.65	.40	.40	.40	.34	.31	.26	.18	.30	.31		.26	.25	.24
9-----	.24	.26	.28	.31	.28	.28	.33	.31	.34	.35	.35	.36	.35	.29	.30	.40	.40		.42	.40	.38
16-----	.20	.20	.12	.17	.08	.16	.18	.10	.16	.08	.05	.06	T	.03	.04	.06	.06		.08	.05	.09
17-----	1.52	1.65	1.17	1.18	1.81	1.05	2.24	1.02	1.31	.72	.92	.72	1.06	1.35	1.00	.68	.76		.62	.58	.78
21-----	.54	.41	1.14	.87	.65	.64	.38	.50	.55	.42	.50	.74	.75	.90	1.09	.87	.96		.94	.85	1.10
Total-----	4.56	4.47	4.39	3.99	4.19	3.65	4.51	3.25	3.62	2.85	3.17	3.16	3.29	3.63	3.43	3.21	3.38		3.31	3.11	3.51
July:																					
9-----	.13	.10	.04	.24	.02	.53	.00	.65	.03	.70	.24	.84	.25	.00	.14	.65	.99		.55	.60	.50
18-----	.03	.04	T	.02	T	T	.02	.57	.01	T	T	T	.01	T	T	T	T		T	T	T
19-----	.57	.65	.61	.51	.48	.51	.38	.57	.45	.55	.48	.60	.53	.51	.37	.62	.52		.59	.51	.46
20-----	.00	.00	.00	.00	.00	.00	.00	.10	.00	.04	.08	.11	.07	.05	.04	.25	.13		.25	.26	.22
21-----	.08	.08	.05	.05	.04	.05	.06	.10	.10	.05	.03	.06	.05	.03	.04	.06			.07	.06	.06
22-----	.37	.38	.38	.35	.38	.37	.39	.39	.39	.35	.39	.35	.36	.37	.32	.37	.38	.76	.37	.40	.40
23-----	.44	.42	.38	.41	.29	.31	.29	.29	.27	.28	.73	.26	.24	.23	.16	.25			.26	.26	.20
24-----	.81	.82	.78	.64	.56	.25	.41	.15	.30	.07	.08	.12	.33	.28	.07	.05	.05		.09	.34	.08
25-----	.00	.00	.00	.00	.02	T	.02	.00	.02	T	T	T	.00	.00	.00	T	T		T	T	T
26-----	.05	.04	.05	.05	.01	T	.02	.00	.04	.00	.00	.03	.02	.03	.00	.02	.02		.01	.01	.00
Total-----	2.48	2.53	2.29	2.27	1.80	2.02	1.59	2.15	1.61	2.04	1.56	2.34	1.66	1.50	1.40	2.30	2.47		2.19	2.18	1.92
August:																					
4-----	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.02	.10	.02	.02	.04	.14	.10		.14	.08	.12
10-----	.26	.31	.49	.35	.10	.60	.27	.20	.63	.26	.55	.75	1.04	.84	.85	.80	.92		.76	.88	1.03
Total-----	.26	.31	.49	.35	.10	.60	.27	.20	.63	.32	.57	.85	1.06	.86	.89	.94	1.02		.90	.96	1.15
September:																					
1-----	.71	.31	.00	.00	.00	.00	.05	.01	.14	.00	.00	.00	.10	.18	.23	.00	.00		.00	.00	.00
11-----	.86	.86	.72	.70	.76	.66	.81	.70	.80	.71	.91	.81	1.02	.99	.96	.79	.82		.80	.85	1.02
27-----	.00	.00	.03	.04	.00	.00	.06	.03	.05	.03	.05	.04	.05	.04	.05	.04	.05		.04	.06	.10
Total-----	1.57	1.17	.75	.74	.76	.66	.92	.74	.99	.74	.96	.85	1.17	1.21	1.24	.83	.87		.84	.91	1.12
October:																					
17-----	.00	.00	.00	.00	.00	.07	.00	.08	.11	.05	.07	.07	.07	.10	.06	.06	.06		.05	.02	.06
18-----	T	T	T	T	T	T	T	.10	T	T	T	T	T	.04	T	.08	.02		.10	.11	T
22-----	.06	.04	.01	.06	.06	.06	.07	.10	.08	.08	.09	.09	.10	.10	.09	.08	.08		.07	.08	.09
Total-----	.06	.04	.01	.06	.06	.13	.07	.18	.19	.13	.16	.16	.17	.24	.15	.22	.16		.22	.21	.15
November:																					
3-----	.21	.42	.37	.49	.43	.48	.44	.49	.42	.48	.44	.46	.41	.49	.47	.45	.44		.42	.42	.43
6-----	.22	.23	.27	.30	.60	.32	.08	.35	.09	.30	.18	.16	.04	.05	.05	.06			.06	.04	.04
7-----	.23	.22	.25	.30	.26	.21	.21	.23	.20	.19	.21	.20	.21	.23	.18	.20	.22		.18	.19	.19
15-----	T	.00	T	.01	T	T	T	.00	T	T	T	.01	T	T	T	T	.01		T	T	T
Total-----	.66	.87	.89	1.10	1.03	1.06	.73	1.07	.71	.97	.83	.83	.66	.77	.70	.74	.73		.66	.65	.66

TABLE 4.—Daily rainfall ¹ at selected recording stations,² 1936-39—Continued

Date	Station No. —																				
	2	5	14	27	31	44	55	56	66	69a	70	82	85	94	107	W-2	W-2a	W-3a	W-4a	W-7	W-9
1938																					
December:	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
2	.10	.13	.13	.19	.25	.26	.08	.20	.11	.07	.07	.10	.10	.14	.14	.07	.07		.11	.11	.12
20	.02	.01	.02	.02	T	.02	.03	.04	.01	.02	.02	.02	.02	T	.02	.02	.02	.02	.02	.02	.02
22	.63	.64	.68	.76	.70	.68	.86	.76	.94	.96	1.00	1.04	.84	.82	.90	1.10	1.04	1.08	1.08	.97	.94
23	.96	.91	.84	.86	.97	1.00	1.06	1.03	1.02	.93	.92	.96	1.18	1.06	1.11	.94	.99	.93	.90	.97	.98
25	.35	.37	.31	.34	.32	.32	.35	.44	.34	.34	.32	.32	.35	.33	.36	.31	.32	.32	.29	.63	.34
26	.32	.30	.30	.32	.28	.30	.32	.23	.31	.32	.30	.32	.31	.33	.31	.31	.31	.30	.31		.33
Total	2.38	2.36	2.28	2.49	2.52	2.58	2.70	2.70	2.73	2.64	2.63	2.76	2.80	2.68	2.84	2.75	2.75		2.71	2.70	2.73
Year 1938	27.88	27.89	27.04	26.95	27.27	26.46	27.81	26.24	26.53		26.46	27.12	27.12	27.25	25.55	25.93				27.19	27.15
1939																					
January:																					
4	.02	.02	.02	.07	T	.06	.02	.03	.02	.03	.03	.04	.02	.03	.00	.04	.04	.04	.04	.03	.02
8	.73	.64	.65	.74	.45	1.24	.59	.59	.55	.57	.52	.46	.30	.42	.56	.40	.44	.43	.30	1.17	.36
9	.58	.53	.72	.53	.61		.49		.59	.53	.50	.64	.77	.58	.48	.66	.72	.69	.81		.77
11	.58	.54	.61	.62	.56	.57	.78	2.02	.82	.74	.76	.86	.76	.74	.76	.80	.75	.75	.65	2.09	.73
12	1.26	1.18	1.24	1.28	1.24	1.36	1.30		1.36	1.30	1.30	1.38	1.34	1.42	1.34	1.34	1.50	1.38	1.36		1.37
14	.10	.12	.10	.10	.08	.11	.08	.21	.10	.11	.12	.12	.10	.10	.11	.10	.09	.10	.10	.10	.08
15	.22	.21	.15	.21	.12	.09	.17		.17	.12	.12	.11	.15	.09	.08	.11	.09	.09	.08	.07	.11
17	.13	.12	.12	.12	.11	.19	.11	.16	.12	.12	.13	.15	.13	.11	.09	.12	.11	.10	.09	.10	.10
23	.45	.38	.38	.36	.30	.30	.27	.28	.29	.25	.25	.25	.26	.28	.29	.27	.28	.27	.27	.27	.29
27	.03	.03	.03	.03	.02	.04	.04	.04	.04	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02		
28	.02	.02	.02	.03	.02	.04	.04	.04	.04	.02	.01	.02	.02	.02	.02	.01	.01	.01	.02		.04
Total	4.12	3.79	4.04	4.09	3.51	3.96	3.85	3.91	4.06	3.81	3.76	4.05	3.87	3.81	3.75	3.87	4.05	3.88	3.74		3.87
February:																					
2	.02	.02	.02	.03	.02	.03	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
3	.07	.04	.07	.06	.04	.06	.05	.06	.06	.05	.05	.07	.05	.07	.05	.05	.07	.06	.05	.06	.08
5	T	T	.01	.01	T	T	T	.01	T	.01	.01	.02	T	.02	T	.02	.02	.02	.02	.02	.02
10	.10	.13	.31	.31	.30	.29	.25	.25	.20	.21	.19	.20	.19	.22	.31	.20	.22	.22	.23	.26	.26
14	.07	.07	.11	.13	.12	.11	.23	.12	.19	.20	.21	.18	.21	.22	.17	.13	.14	.13	.15	.19	.16
17	.40	.46	.49	.43	.32	.41	.33	.42	.37	.46	.38	.48	.34	.38	.38	.47	.47	.45	.42	.47	.42
19	.92	.85	.86	.80	.84	.84	.88	.86	.86	.80	.78	.78	.89	.73	.79	.76	.78	.78	.78	.79	.80
24	.08	.10	.10	.08	1.16	.06	.08	.06	.08	.06	.07	.07	.08	.07	.10	.07	.06	.07	.06	.07	
25	1.21	1.13	1.07	.96	1.05	1.05	1.11	1.01	1.17	.99	1.00	1.03	1.11	1.17	.98	1.06	1.12	1.07	1.00	1.08	
27	.07	.06	.05	.07	.05	.05	.04	.05	.07	.06	.06	.06	.09	.03	.03	.06	.07	.08	.06	.05	.05
Total	2.94	2.86	3.09	2.88	2.85	2.90	2.99	2.86	3.02	2.86	2.77	2.91	2.98	2.93	2.83	2.84	2.97	2.90	2.79	3.01	
March:																					
4	.02	.02	.01	.01	.01	.01	.01	.02	.01	.03	.03	.03	.13	.02	.02	.03	.02	.02	.02	.02	.03
5	.08	.05	.05	.03	.03	.03	.04	.05	.02	.06	.06	.17		.14	.10	.07	.05	.07	.08	.09	.08
7	.00	.00	.03	.04	T	T	.01	.04	.02	.04	.04	.05	.02	.02	.00	.04	.05	.05	.05	.05	T
24	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.92	.94	1.06	1.14	.98	1.02	.86	.93	.86	.92	.94	1.09	1.06	1.07	1.09	1.19	1.14	1.16	1.07	1.06	1.05
28	T	T	T	.05	.10	.06	.03	.06	.04	.07	.05	.07	.04	.02	.02	.11	.09	.14	.10	.06	.02
Total	1.02	1.01	1.15	1.29	1.12	1.12	.95	1.10	.95	1.12	1.12	1.41	1.25	1.27	1.23	1.44	1.35	1.44	1.32	1.28	1.18
April:																					
5	T	.03	.02	.03	.16	.05	.19	.13	.24	.23	.23	.28	.35	.32	.34	.24	.32	.29	.31	.43	.38
11	.04	.04	.03	T	.04	.06	.07	.06	.06	.04	.04	.03	.02	.05	.03	.03	.04	.03	.03	.03	.03
16	.58	.55	.53	.41	.44	.27	.25	.23	.21	.23	.22	.25	.24	.24	.26	.26	.24	.27	.26	.27	.28
26	.33	.30	.28	.40	.42	.32	.22	.29	.19	.29	.28	.31	.33	.33	.59	.45	.45	.45	.40	.47	.49
27	.00	.00	.01	.02	.00	.01	T	.03	.01	.04	.03	.04	.04	.00	.00	.06	.05	.08	.07	.09	.09
Total	.95	.92	.87	.86	1.06	.71	.73	.74	.71	.83	.80	.91	.98	.94	1.22	1.04	1.10	1.12	1.07	1.29	1.27
May:																					
7	.28	.37	.36	.44	.52	.56	.65	.61	.56	.50	.46	.28	.25	.28	.15	.20	.26	.22	.17	.15	.18
8	.26	.29	.32	.31	.24	.29	.20	.29	.21	.28	.27	.38	.45	.35	.34	.40	.39	.41	.40	.40	.38
13	.12	.12	.12	.07	.04	.06	.06	.08	.07	.07	.07	.08	.09	.08	.10	.08	.08	.08	.07	.10	.10
16	1.34	1.39	1.38	1.40	1.34	1.37	1.45	1.41	1.40	1.27	1.29	1.20	1.16	1.10	1.08	1.21	1.20	1.23	1.15	1.10	1.10
17	.82	.77	.82	.84	.67	.71	.88	.79	1.02	.90	.90	1.06	1.09	1.24	1.02	1.07	1.11	1.14	1.02	1.08	1.06
18	.37	.37	.33	.57	.34	.66	.47	.78	.93	.76	.79	.84	.96	1.12	1.38	.82	.93	.85	.85	.94	.89
19	.02	.02	.01	.01	.01	.04	.03	.04	.02	.08	.08	.08	.11	.02	.08	.04	.04	.05	.04	.06	.06
20	.86	.84	.88	.70	.71	.81	.80	.81	.75	.89	.85	.89	.97	1.02	1.13	.89	.93	.96	.98	1.06	1.11
28	.09	.08	.03	.02	T	.06	.07	.06	.07	.02	.13	.00	.01	.00	.00	.02	.02	.05	.08	.02	.02
Total	4.16	4.25	4.25	4.36	3.87	4.56	4.61	4.87	5.03	4.77	4.84	4.81	5.09	5.21	5.28	4.73	4.96	4.99	4.76	4.91	4.90
June:																					
1	.00	.00	.00	.00	.00	.00	T	.01	.00	.00	.00	.01	.01	.00	.00	.03	.02	.02	.02	.02	T
3	.10	.10	.07	.07	.18	.12	.07	.24	.05	.18	.18	.27	.02	.14							

TABLE 4.—Daily rainfall¹ at selected recording stations,² 1936-39—Continued

Date		Station No.—																				
		2	5	14	27	31	44	55	56	66	69a	70	82	85	94	107	W-2	W-2a	W-3a	W-4a	W-7	W-9
August:		Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1-----		.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.03	.00	.00	.00	.03	.04	.04	.04	.04	.04	.03
4-----		1.92	1.86	1.76	1.01	1.50	.35	.88	.36	.53	.38	.42	.40	.50	.36	.33	.30	.32	.40	.36	.37	
13-----		.07	.08	.03	.06	.12	.10	.18	.06	.09	.07	.05	.06	.08	.18	.14	.12	.13	.08	.02	.03	
15-----		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.02	.00	.05	T	T	
16-----		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.04	.00	.00	.24	.19	.16	.28	.35	.43	.36	
19-----		1.33	1.16	1.19	.78	.80	.78	1.63	.84	1.51	.80	.87	.80	1.19	1.34	.78	.56	.65	.58	.77	.90	
20-----		.92	.86	.96	.66	.59	.68	.70	.66	.58	.68	.61	.71	.56	.76	.56	.76	.73	.72	.68	.59	
23-----		.04	.05	.06	.07	.10	.06	.42	.09	.26	.12	.26	.09	.09	.11	.12	.10	.09	.15	.16	.29	
27-----		.14	.12	.14	.12	.12	.08	.07	.07	.11	.10	.10	.10	.11	.15	.12	.10	.10	.11	.09	.12	
Total-----		4.42	4.13	4.14	2.70	3.23	2.05	3.88	2.08	3.08	2.18	2.31	2.23	2.43	3.04	2.32	2.22	2.22	2.28	2.38	2.72	
September:																						
9-----		.00	.00	.09	.13	.00	.30	.01	.28	.06	.22	.17	.09	.08	.04	.03	.07	.17	.10	.08	.20	
16-----		.00	.00	.01	.05	} .04 {	.05	.10	.04	.08	.04	.05	.02	.01	.00	.00	.00	.00	.00	.00	.00	
17-----		.02	.00	.03	.04		.07	.07	.08	.16	.16	.16	.06	.07	.00	.00	.07	.03	.02	.02	T	T
29-----		.08	.08	.20	.25		.39	.33	.55	.40	.53	.28	.34	.13	.24	.42	.14	.11	.11	.12	.11	.14
Total-----		.10	.08	.33	.47	.43	.75	.73	.80	.83	.70	.72	.30	.40	.46	.17	.25	.31	.24	.21	.34	
October:																						
8-----		.20	.26	.22	.29	.48	.36	.44	.41	.44	.39	.48	.34	.44	.57	.46	.36	.34	.35	.33	.34	
9-----		.00	.00	.00	.00	.09	.07	.00	.11	.00	.10	.10	.10	.02	.00	.02	.08	.06	.10	.08	.02	
10-----		1.42	1.50	1.53	1.71	1.55	1.70	1.00	1.54	1.06	1.27	.95	1.03	1.21	1.12	.97	1.04	1.11	1.07	1.09	1.22	
24-----		.06	.07	.05	.08	.07	.07	.06	.06	.06	.05	.06	.06	.05	.06	.04	.05	.06	.06	.06	.04	
25-----		.00	.00	.02	.00	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	
26-----		.00	.00	.00	.00	.00	.00	.00	.01	.00	.01	.03	.03	.00	.00	.00	.01	.01	.01	.01	.01	
27-----		T	.00	.04	.04	.03	.07	.19	.18	.13	.24	.21	.24	.24	.20	.14	.28	.26	.31	.27	.28	
Total-----		1.68	1.83	1.86	2.12	2.22	2.29	1.69	2.31	1.69	2.06	1.83	1.80	1.96	1.95	1.63	1.82	1.84	1.86	1.86	1.99	
November:																						
10-----		.14	.16	.18	.15	.21	.14	.14	.15	.14	.13	.11	.13	.14	.15	.11	.11	.09	.10	.09	.11	
11-----		.98	1.00	1.02	1.08	.98	1.12	1.05	.82	1.09	1.10	1.07	1.08	1.03	1.14	1.11	1.08	1.13	1.10	1.08	.79	
12-----		.19	.14	.13	.19	.16	.15	.19	.48	.17	.20	.19	.21	.18	.25	.16	.21	.24	.22	.25	.62	
14-----		.01	.02	.01	.01	.02	.03	.02	.01	.02	.01	.01	.01	.01	.02	.02	.01	.01	.01	.01	.01	
15-----		.14	.14	.16	.17	.16	.16	.11	.18	.10	.20	.17	.20	.13	.06	.07	.18	.20	.20	.20	.15	
17-----		.02	.04	.02	.01	.02	.01	.02	.02	.03	.02	.02	.02	.01	.03	.02	.02	.02	.04	.03	.04	
18-----		.22	.17	.14	.10	.06	.06	.05	.07	.02	.07	.05	.05	.03	.02	.03	.06	.04	.04	.02	.04	
29-----		.08	.10	.07	.10	.07	.08	.08	.07	.06	.07	.07	.06	.06	.08	.08	.05	.06	.04	.06	.08	
30-----		.55	.50	.50	.50	.53	.53	.57	.55	.55	.54	.53	.55	.58	.65	.63	.55	.60	.60	.65	.65	
Total-----		2.33	2.27	2.23	2.31	2.21	2.28	2.23	2.35	2.18	2.34	2.22	2.31	2.17	2.40	2.23	2.27	2.39	2.35	2.39	2.57	
December:																						
22-----		.63	.66	.60	.70	.68	.69	.72	.67	.81	.72	.72	.81	.90	1.00	.90	.87	.95	.95	.95	.93	
25-----		.27	.28	.25	.27	.24	.25	.20	.22	.22	.22	.21	.23	.23	.25	.25	.23	.22	.23	.25	.22	
Total-----		.90	.94	.85	.97	.92	.94	.92	.89	1.03	.94	.93	1.04	1.13	1.25	1.15	1.10	1.17	1.18	1.20	1.15	
Year, 1939-----		27.29	26.56	27.26	25.78	25.07	24.76	25.75	25.04	25.48	24.60	24.29	24.81	25.19	26.16	24.42	24.49	25.40	24.64	24.64	24.64	

¹ Daily rainfall amounts are for the 24-hour period ending at 6 p. m. from October through March and at 7:30 p. m. from April through September.

² Records before April 1938 from a standard gage.

³ Record began.

⁴ Snow.

TABLE 5.—Soil moisture¹ (percent of dry weight) of designated depth intervals at the ¼-acre plots on the dates indicated, 1938-39

Sampling station ² and depth interval	1938										1939																									
	Oct.		Nov.	Dec.			Jan.	Feb.		Mar.				Apr.		May		June		July		Aug.		Sept.			Oct.		Nov.		Dec.					
	6	26	17	3	2	15	29	4	19	1	16	2	3	17	30	14	28	11	25	8	22	6	20	7	17	1	14	3	29	12	26	9	22	5	6	21
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
¼-acre plot No. 1:																																				
0-6 inches.....	12	14	11	17	11	33	32	30	31	---	27	22	28	30	32	23	22	26	28	12	10	13	14	17	12	13	22	21	18	28	28	28	26			
6-12 inches.....	23	27	23	24	23	30	31	31	33	---	34	32	32	34	30	28	30	31	30	23	21	21	20	19	20	18	20	21	24	26	30	30				
12-24 inches.....	24	28	29	24	27	26	29	31	31	---	34	31	31	32	30	27	31	30	29	22	22	22	22	18	21	19	20	19	23	22	22	24				
24-36 inches.....	26	27	30	25	29	28	29	31	29	---	30	29	30	29	29	26	31	29	28	24	25	21	22	17	20	19	20	18	21	20	20	22				
36-48 inches.....	28	27	30	26	32	28	28	31	28	---	28	28	28	28	28	26	28	28	28	27	24	26	23	23	17	20	19	20	16	21	18	20	22			
48-60 inches.....	29	27	30	26	32	26	29	29	28	---	27	27	28	28	28	26	28	28	28	27	24	27	23	22	17	22	20	22	16	21	19	20	23			
¼-acre plot No. 2:																																				
0-6 inches.....	11	18	14	16	12	31	35	32	31	29	---	26	30	24	30	21	27	27	28	14	12	15	15	15	13	11	24	24	17	29	28	26				
6-12 inches.....	23	25	23	24	22	29	33	35	34	34	---	31	34	30	31	30	34	30	28	24	22	22	20	22	20	21	25	31	24	28	31	32				
12-24 inches.....	22	26	26	25	24	25	30	34	31	33	---	31	32	30	30	29	33	30	28	23	22	22	22	22	22	20	23	27	24	24	24	26				
24-36 inches.....	25	28	26	26	25	26	29	34	29	32	---	29	27	28	30	27	31	28	29	23	21	23	21	21	22	21	20	26	24	23	22	26				
36-48 inches.....	27	27	25	26	26	26	28	33	28	29	---	27	30	30	29	26	29	28	30	23	22	24	25	25	22	21	21	28	24	25	23	26				
48-60 inches.....	28	28	25	26	27	25	27	31	28	29	---	27	30	30	27	27	28	28	28	29	23	22	24	26	26	25	23	22	27	24	26	24	26			
¼-acre plot No. 3:																																				
0-6 inches.....	10	18	16	15	13	34	34	30	32	---	29	22	32	30	32	26	27	27	27	15	12	13	14	17	12	12	25	22	18	29	27	25				
6-12 inches.....	24	25	23	24	22	33	33	34	32	---	33	33	31	31	30	32	32	32	23	25	20	19	22	20	22	23	23	22	38	29	27					
12-24 inches.....	23	26	25	25	24	29	31	33	31	---	35	32	30	30	31	34	34	31	33	24	20	19	21	20	24	22	22	22	23	23	23	23	23			
24-36 inches.....	26	28	27	26	25	28	32	32	30	---	32	31	28	31	31	34	32	30	32	26	26	22	21	22	20	24	23	21	23	23	23	22				
36-48 inches.....	28	30	27	27	26	27	30	30	31	---	30	31	28	29	30	34	32	30	30	26	29	23	21	23	21	23	22	22	24	23	22	22				
48-60 inches.....	27	30	26	28	26	27	32	28	31	---	29	30	26	28	28	34	31	30	29	26	29	25	21	25	25	22	23	23	24	21	21	21				
¼-acre plot No. 4:																																				
0-6 inches.....	12	17	16	17	15	36	35	32	33	---	34	27	30	23	23	19	22	30	17	13	14	14	11	11	11	31	22	16	30	31	23					
6-12 inches.....	26	25	23	25	24	35	35	32	34	---	34	31	33	26	24	22	29	32	32	21	23	27	26	25	28	30	28	32	34	32						
12-24 inches.....	26	27	26	25	27	31	34	32	34	---	35	32	34	27	25	22	27	27	29	32	28	26	29	30	26	25	30	28	27	32	30	30				
24-36 inches.....	28	30	28	26	29	30	34	33	33	---	32	32	34	31	24	27	27	29	29	27	24	27	30	26	24	29	25	26	27	26	29					
36-48 inches.....	30	32	29	29	30	30	32	31	31	---	31	32	35	31	29	26	27	28	29	28	26	25	26	31	26	23	30	26	27	27	29					
48-60 inches.....	30	31	29	30	31	31	32	29	32	---	30	31	36	31	30	28	28	28	30	28	28	26	26	31	27	28	32	29	28	27	29	31				

TABLE 6.—Soil moisture (percent of dry weight) of designated depth intervals at watersheds 12 and 16 on dates indicated, 1937–39

WATERSHED 12 ¹								WATERSHED 16 ¹							
Date	Depth interval (inches)						Samples taken at each point	Date	Depth interval (inches)						Samples taken at each point
	0-6	6-12	12-24	24-36	36-48	48-60			0-6	6-12	12-24	24-36	36-48	48-60	
1937								1937							
October:	Percent	Percent	Percent	Percent	Percent	Percent	Number	October:	Percent	Percent	Percent	Percent	Percent	Percent	Number
7	17	18	18	18	20	21	12	6	8	22	22	23	24	25	13
25	36	29	20	19	20	22	12	16	31	25	23	24	25	26	12
22	34	31	24	20	20	22	12	23	30	29	24	24	25	26	12
28	30	29	22	19	20	22	12	29	24	28	24	23	24	26	13
November:								November:							
4	28	27	23	19	20	22	12	5 ²	27	27	24	24	25	26	13
11	37	34	30	22	20	22	12	12	34	33	31	29	27	27	13
18	35	34	30	23	20	22	12	19	31	32	32	28	27	27	13
26	38	35	31	24	20	22	12	27	35	34	33	28	27	26	13
December:								December:							
2	37	34	30	24	21	22	12	3 ²	33	33	33	29	26	26	13
9	34	32	30	24	21	22	12	10	30	31	31	28	27	27	13
1938								1938							
January:								January:							
7	38	35	32	31	29	26	12	8	36	35	34	34	32	29	13
14	38	35	32	31	29	26	12	13	34	34	34	34	30	27	13
20 ²	35	34	32	30	28	25	12	20 ²	32	34	34	34	32	29	13
26	43	38	33	31	29	27	12	28	36	35	35	34	32	29	13
February:								February:							
3	40	37	34	31	30	27	12	4	33	34	34	34	31	28	13
11	35	32	30	30	28	26	12	10	24	33	33	34	33	30	13
24	43	38	33	31	31	28	12	25	37	36	35	34	33	30	7
March:								March:							
3	38	35	32	32	31	29	12	3	33	34	34	33	33	30	7
11	36	34	31	31	30	28	12	10	33	34	34	33	34	30	7
18 ²	27	30	30	29	29	27	6	18 ²	30	32	33	34	33	30	7
24	33	30	30	30	30	29	6	24	33	33	34	34	34	30	7
31 ³	34	35	32	30	29	28	6	31 ³	40	36	35	35	34	31	7
April:								April:							
6	31	30	30	30	30	28	6	6	33	35	35	35	33	30	7
13	32	30	28	29	30	28	6	13	31	34	33	34	33	31	7
21	37	33	30	28	29	28	6	21	35	34	35	34	32	30	7
29	36	33	30	29	29	27	6	29	33	34	34	34	33	30	7
May:								May:							
5	31	30	29	30	30	28	6	5	28	32	34	34	32	31	7
11	31	29	27	26	27	26	6	11	34	32	33	33	32	31	14
18	30	27	26	27	28	27	12	18	31	32	33	34	34	32	7
25	33	28	25	25	28	28	6	25	33	35	35	35	33	32	7
June:								June:							
1	24	23	22	23	26	26	6	1	30	32	32	33	33	31	7
8								8 ²	31	32	32	33	33	31	7
15	24	22	21	23	26	26	6	15	30	32	32	33	33	31	7
24								24	32	31	32	33	32	31	7
29	24	22	22	21	24	25	6	29	28	30	30	32	32	30	7
July:								July:							
1	18	20	19	20	23	26	6	6	20	28	29	31	32	30	7
12	18	20	19	20	22	24	18	12							
13	19	21	20	21	23	25	6	13	22	26	28	30	32	31	7
28	26	21	21	22	24	26	6	28	28	28	26	29	31	30	7
August:								August:							
3	17	19	19	20	22	24	6	3	21	26	27	30	31	30	7
10 ²	16	19	19	21	23	23	5	10 ²	15	23	24	26	30	29	6
17	17	19	18	19	20	24	6	17	18	25	25	27	30	30	7
25	13	18	17	19	21	22	6	24	14	23	25	27	30	30	7
31	13	17	17	18	19	21	38	31							
September:								September:							
7	13	18	17	18	20	21	6	7	10	23	25	27	30	28	7
14	26	19	18	18	19	20	6	14	19	23	25	27	30	30	7
21	19	20	18	18	19	21	6	21	14	21	24	26	28	30	7
October:								October:							
5	16	19	17	18	19	19	6	5	12	20	23	25	27	29	7
25	15	18	17	17	19	20	6	25	12	21	24	26	28	29	7
November:								November:							
17	25	18	17	17	18	20	6	17	19	19	23	26	28	29	7
December:								December:							
1	20	19	18	18	20	21	6	1	17	18	23	26	28	28	7
14	17	19	18	18	19	21	6	16	14	20	24	27	29	29	7
28	37	34	25	19	20	21	6	29	33	32	27	28	30	30	6
1939								1939							
January:								January:							
18	38	35	31	27	22	22	6	18	36	34	33	31	30	29	3
31	36	34	32	28	23	21	6	31	31	33	33	31	29	30	11
February:								February:							
15	37	33	30	27	22	23	6	15	30	32	33	32	30	30	11
March:								March:							
2	37	34	32	31	28	24	11	2	34	35	34	34	31	30	16
15	32	33	31	30	26	23	5	15	25	34	33	33	32	30	5
30	31	30	30	28	24	23	6	30	28	33	33	34	33	30	6
April:								April:							
13	23	25	26	27	24	22	6	13	30	34	33	33	32	29	5
27 ²	22	23	23	23	23	22	7	27 ²	33	32	32	33	31	29	6
May:								May:							
11	25	21	21	21	21	21	6	11	24	31	31	31	31	29	6
25	30	28	27	23	22	22	6	25	26	33	33	33	32	30	7
June:								June:							
8	32	29	25	23	22	22	5	8	30	35	34	34	32	31	6
22	32	26	21	21	21	21	4	22	29	33	34	34	32	30	4
July:								July:							
7	18	18	19	20	21	20	5	7	14	24	26	31	31	29	4
19	15	17	18	18	19	21	4	19	13	22	24	30	31	30	6

See footnotes at end of table.

TABLE 6.—Soil moisture (percent of dry weight) of designated depth intervals at watersheds 12 and 16, on dates indicated, 1937-39—Continued

WATERSHED 12 ¹								WATERSHED 16 ¹							
Date	Depth interval (inches)						Samples taken at each point	Date	Depth interval (inches)						Samples taken at each point
	0-6	6-12	12-24	24-36	36-48	48-60			0-6	6-12	12-24	24-36	36-48	48-60	
1939	Percent	Percent	Percent	Percent	Percent	Percent	Number	1939	Percent	Percent	Percent	Percent	Percent	Percent	Number
August:								August:							
2.....	15	17	17	18	19	21	12	2.....	13	21	23	25	29	29	13
16.....	12	18	17	18	19	21	4	16.....	12	18	21	23	29	27	4
31.....	22	19	17	17	18	21	4	31.....	17	20	22	22	25	26	4
September:								September:							
13.....	16	17	17	18	20	22	4	14.....	14	19	20	21	22	24	4
28.....	15	18	17	18	20	22	4	28.....	12	20	22	23	24	26	4
October:								October:							
12.....	32	19	16	17	19	20	5	13.....	24	20	22	23	24	24	6
25.....	23	21	20	18	19	20	5	25.....	21	22	22	23	24	25	6
November:								November:							
8.....	21	19	18	18	20	22	5	8.....	17	21	22	22	23	24	5
21.....	35	25	19	19	19	22	4	21.....	30	28	22	22	23	24	5
December:								December:							
7.....	31	24	17	17	18	20	6	7.....	28	26	22	23	23	24	5
20.....	28	26	19	19	20	22	5	20.....	23	26	22	24	24	24	5

¹ See fig. 2 for location and tables 21 and 24 for description of vegetal cover and tillage.

² Sample taken before the rain.
³ Sample taken after the rain.

TABLE 7.—Area, elevation, shape, slope, soil, and land use for each watershed

Run-off station	Drainage area		Mean sea-level elevation		Shape factor ¹	Area in slope range of—				Average slope ²	Predominant soil type	Area in—			
			Low-est ³	High-est		0-1 percent	1-3 percent	3-6 percent	Over 6 percent			Mead-ow	Pasture	Culti-vated land	Other uses
	Square miles	Acres	Feet	Feet		Percent	Percent	Percent	Percent	Percent		Percent	Percent	Percent	Percent
A.....	42.0	573	573	595	0.714	32	66	2	0	1.57	Houston-Hunt clay.....	0	16.2	33.8	0
C.....	0.90	579	533	595	.426	14	76	10	0	2.04	do.....	0	14.4	80.7	4.9
D.....	1.74	1,110	519	595	.353	15	72	13	0	2.10	do.....	0	11.0	84.4	4.6
G.....	6.84	4,380	478	595	.282	19	68	12	1	2.06	Houston black clay.....	2.1	12.3	81.7	3.9
J.....	9.16	5,860	454	595	.199	17	69	11	3	2.14	do.....	2.8	12.9	80.6	3.7
Z.....	.48	310	492	553	.599	1	85	14	0	2.34	do.....	18.0	17.1	61.0	3.9
Y.....	.48	309	506	571	.531	3	79	18	0	2.41	do.....	1.5	17.0	79.8	1.7
Y1.....		132	518	570	.532	6	67	27	0	2.57	do.....	0	6.9	92.0	1.1
Y4.....		79.9	524	569	.521	3	61	36	0	2.86	do.....	0	9.0	90.1	.9
Y6.....		20.9	538	569	.720	10	35	55	0	3.21	Houston black clay, shallow phase over chalk.....	0	0	99.1	.9
Y7.....		40.0	544	571	.602	9	91	0	0	1.87	Houston black clay.....	0	0	100	0
Y8.....		20.8	537	570	.379	22	67	11	0	2.24	do.....	0	0	97.5	2.5
Y10.....		21.0	539	565	1.14	0	85	15	0	1.88	do.....	0	0	97.5	2.5
W1+W2.....	.48	306	520	571	.456	8	74	18	0	2.33	do.....	5.7	12.6	77.0	4.7
W1.....		176	520	571	.262	11	75	14	0	2.19	do.....	3.2	6.1	86.5	4.2
W2.....		130	521	569	.591	5	74	21	0	2.45	do.....	9.0	21.5	63.9	5.6
W6.....		42.3	538	569	.639	0	99	1	0	2.03	do.....	2.5	15.2	75.1	7.2
W8.....		40.4	529	565	.364	15	65	20	0	2.28	do.....	1.7	14.4	79.6	4.3
W10.....		19.7	540	565	.856	27	72	1	0	2.07	do.....	0	0	100	0
2.....		2.70	547	554.5	.734	0	100	0	0	1.91	do.....	0	0	100	0
3.....		3.09	557	566	.667	0	100	0	0	1.91	do.....	0	0	100	0
5.....		3.09	549.5	563	.667	0	48	52	0	3.27	Houston black clay, shallow phase.....	0	0	100	0
6.....		3.04	528.5	543	.787	0	38	62	0	3.18	do.....	0	0	100	0
7.....		3.15	555.5	564	.620	11	89	0	0	1.67	Houston black clay.....	0	0	100	0
11.....		3.23	562	566	.878	75	25	0	0	.94	do.....	0	0	100	0
12.....		2.97	535	547.5	.896	0	22	78	0	3.81	do.....	100	0	0	0
13.....		3.19	538.5	551	.774	0	77	23	0	3.07	Houston black clay, shallow phase over chalk.....	0	0	100	0
14.....		3.02	545	551	.939	0	100	0	0	1.55	Houston-Hunt clay.....	0	0	100	0
16.....		3.17	539	550.5	.711	0	100	0	0	2.58	Houston black clay.....	0	0	100	0
17.....		2.99	553	560	.903	0	100	0	0	1.83	do.....	0	0	100	0
18.....		3.04	564	570	.627	72	28	0	0	1.14	do.....	0	0	100	0
P1.....		.243	518	523	.375	0	100	0	0	2.82	do.....	0	0	100	0
P2.....		.243	517.5	522.5	.375	0	100	0	0	2.98	do.....	0	0	100	0
P3.....		.243	517.5	522.5	.375	0	100	0	0	2.98	do.....	0	0	100	0
P4.....		.243	517.5	522.5	.375	0	100	0	0	2.98	do.....	0	0	100	0

¹ Area (square miles) divided by the square of the length (miles).

² The land slope for the watersheds of less than 4 acres is the product of the length of the contours in feet and the contour interval in feet divided by the area in square feet. For watersheds of 20 acres and larger, the slope was determined by scaling topographic maps.

³ The lowest elevation of the watershed is the natural low point at the outlet of the watershed. Where the lowest point of the watershed is in a well-defined channel, the elevation of the flood plain is also given.

⁴ Elevation of low point in flood plain at outlet is as follows: Watershed D, 521 feet; G, 485; J, 464; and Y, 509 feet.

TABLE 8.—Instrumentation for each watershed

Watershed	Run-off measuring station ¹					Rain gages		Ground-water wells		Silt-measuring device			
	Date record started	Location		Station type ²	Mean sea-level elevation of point of zero flow	Recording	Nonre-cording	Recording	Nonre-cording	Type	Size of silt box		
		Latitude	Longitude								Length	Width	Depth
					<i>Feet</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>		<i>Feet</i>	<i>Feet</i>	<i>Feet</i>
A.....	May 13, 1938	31°32'10"	96°53'33"	10-PW	573.3	1	1	0	0	Spot ³			
C.....	Dec. 16, 1937	31°31'11"	96°53'34"	CM	532.4	3	11	0	7				
D.....	Nov. 12, 1937	31°30'38"	96°53'22"	CM	518.8	5	20	2	16	Spot ³			
G.....	Nov. 6, 1937	31°28'59"	96°52'06"	CMS	478	21	55	23	64				
J.....	June 24, 1937	31°27'54"	96°50'59"	CMS	453.4	23	78	27	104	Spot ³			
Z.....	May 5, 1939	31°28'08"	96°51'44"	CM	492.0	2	8	1	11	do. ³			
Y.....	Apr. 22, 1937	31°28'36"	96°52'36"	CM	505.8	11	0	17	14	do. ³			
Y2.....	Oct. 4, 1938	31°28'30"	96°52'46"	15-PW	518	6	0	6	3				
Y4.....	Oct. 5, 1938	31°28'30"	96°52'54"	10-PW	524	4	0	3	1				
Y6.....	Sept. 16, 1938	31°28'26"	96°53'09"	6-PW	538	1	0	3	0	Spot ³			
Y7.....	Dec. 16, 1938	31°28'08"	96°52'49"	6-PW	544	2	0	0	1				
Y8.....	Mar. 2, 1939	31°28'22"	96°52'54"	6-PW	537	1	0	2	1				
Y10.....	July 12, 1938	31°28'31"	96°53'10"	6-PW	539	1	0	0	1	Spot ³			
W1+W2.....	June 23, 1937					12	0	6	18	do. ³			
W1.....	June 22, 1937	31°27'27"	96°52'48"	15-PW	520.4	9	0	4	9	do. ³			
W2.....	June 23, 1937	31°27'19"	96°52'55"	15-PW	521.2	5	0	2	9	do. ³			
W6.....	May 3, 1939	31°27'24"	96°53'11"	6-PW	538	2	0	1	2				
W8.....	July 11, 1938	31°27'21"	96°52'56"	6-PW	524.9	2	0	0	3	Spot ³			
W10.....	July 12, 1938	31°27'12"	96°53'00"	6-PW	540	1	0	0	1	do. ³			
2.....	Apr. 1, 1938	31°27'21"	96°53'13"	3-H	544.0	1	0	0	0	Ramser	40	8	2
3.....	Dec. 7, 1938	31°27'29"	96°53'12"	3-H	553.8	1	0	0	0	do	40	8	2
5.....	Oct. 1, 1938	31°27'46"	96°53'00"	3-H	546.6	1	0	0	0	do	40	8	2
6.....	Nov. 9, 1938	31°27'13"	96°52'47"	3-H	525.7	1	0	0	0	do	40	8	2
7.....	Mar. 9, 1938	31°28'11"	96°52'59"	3-H	552.6	1	0	1	0	do	40	8	2
11.....	Mar. 2, 1938	31°28'02"	96°53'04"	3-H	559.0	1	0	0	0	do	40	8	2
12.....	Dec. 15, 1937	31°28'48"	96°52'59"	3-H	531.7	1	0	0	0	do	20	8	2
13.....	Mar. 8, 1938	31°28'41"	96°52'48"	3-H	535.8	1	0	0	0	do	40	8	2
14.....	Mar. 9, 1939	31°28'59"	96°53'27"	3-H	541.8	1	0	0	0				
16.....	Sept. 24, 1937	31°28'37"	96°53'22"	2-P	536.9	1	0	0	0	Ramser	40	8	2
17.....	Feb. 6, 1939	31°27'45"	96°53'14"	3-H	550.0	1	0	0	0	do	40	8	2
18.....	Apr. 2, 1938	31°28'04"	96°53'07"	3-H	561.0	1	0	0	0	do	40	8	2
P 1.....	June 8, 1938	31°27'25"	96°52'35"	1-H	517.8	1	0	0	0	do	16	5	1.5
P 2.....	June 7, 1938	31°27'24"	96°52'34"	1-H	516.2	1	0	0	0	do	16	5	1.5
P 3.....	June 7, 1938	31°27'23"	96°52'33"	1-H	516.2	1	0	0	0	do	16	5	1.5
P 4.....	June 7, 1938	31°27'22"	96°52'32"	1-H	516.2	1	0	0	0	do	16	5	1.5

¹ Each station has a Friez type FW-1 water-stage recorder operating on a chart scale of 1 inch equals 25 minutes and 1 inch equals 0.2-foot stage. These recorders have vertical drums that make 1 revolution each 6 hours.

² 3-H, H flume, 3 feet deep. 2-P, Parshall flume, 2-foot throat width. 15-PW Parshall flume, 15-foot throat width, and a weir control for low flows. CM, Current-

meter station with artificial control. CMS, Current-meter station with artificial control and auxiliary slope recorder for high flows.

³ The sample is obtained from a milk bottle that has been lowered into and removed from the stream bed at such a speed that it is not quite full when it reaches the surface.

TABLE 9.—Land use distribution¹ in each watershed, 1937-39

1937														
Watershed	Meadow	Pasture	Johnson grass and idle land	Intertilled crops				Drilled or broadcast crops			Other crops	Fallow	Farm- steads	Roads
				Cotton	Corn	Sorghum	Millet and Sudan grass	Oats	Sorghum	Millet and Sudan grass				
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
A.....	0	19.3	0	30.1	34.9	2.6	0	0	13.1	0	0	0	0	0
C.....	0	14.5	6.8	47.6	19.6	3.3	1.8	.3	1.1	0	.1	.1	1.2	3.6
D.....	0	11.0	8.3	50.0	15.5	2.8	3.7	1.3	.7	0	.5	1.7	1.3	3.2
G.....	2.0	12.1	4.0	46.0	17.9	3.6	2.2	5.1	1.5	0	1.1	.8	1.2	2.5
J.....	2.7	12.7	3.2	45.8	18.9	3.3	1.7	4.7	2.0	0	.8	.6	1.3	2.3
Y.....	1.8	16.4	17.6	32.8	17.8	1.8	0	7.4	2.5	0	0	0	.8	1.1
W1+W2.....	6.2	11.9	.3	40.1	16.9	.5	.5	14.2	3.4	0	0	.4	2.0	3.6
W1.....	3.0	5.1	.6	51.3	20.5	.6	.9	10.5	3.4	0	0	0	1.5	2.6
W2.....	10.6	21.8	0	24.1	11.6	.5	0	19.5	3.5	0	0	.9	2.6	4.9
12.....	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0
16.....	0	0	0	0	0	0	0	100.0	0	0	0	0	0	0
1938 ²														
A.....	0	19.9	0	39.9	28.7	8.9	0	0	0	0	2.6	0	0	0
C.....	0	14.5	10.8	30.1	23.5	7.4	5.1	.3	.4	.6	.9	1.5	1.3	3.6
D.....	0	11.1	11.1	29.5	23.5	7.9	3.9	1.2	.8	2.3	1.0	3.1	1.4	3.2
G.....	1.9	12.3	3.8	33.8	21.2	5.4	2.4	4.9	3.3	1.6	2.8	2.7	1.4	2.5
J.....	2.7	12.8	3.6	32.7	22.1	4.5	2.4	5.1	3.5	1.5	3.3	2.1	1.4	2.3
Z.....	18.0	17.1	.2	29.8	12.1	3.7	2.9	5.8	5.4	.7	.3	.1	1.7	2.2
Y.....	1.5	17.7	0	36.9	22.8	6.1	0	10.4	2.8	.1	0	0	.5	1.2
Y2.....	0	8.8	0	43.7	23.3	8.5	0	14.3	.4	0	0	0	0	1.0
Y4.....	0	11.9	0	42.5	22.7	8.6	0	13.4	0	0	0	0	0	.9
Y6.....	0	0	0	49.8	24.6	0	0	24.6	0	0	0	0	0	1.0
Y7.....	0	0	0	39.5	37.4	.5	.8	4.3	17.5	0	0	0	0	0
Y8.....	0	0	0	47.4	25.1	0	0	25.1	0	0	0	0	0	2.4
Y10.....	0	0	0	53.1	23.9	0	0	20.6	0	0	0	0	0	2.4
W1+W2.....	5.5	12.0	.2	37.7	20.8	5.3	0	11.9	.1	1.1	.7	0	1.2	3.5
W1.....	3.1	6.0	.4	41.3	22.1	9.0	0	12.7	.2	.3	.6	0	1.7	2.6
W2.....	9.0	20.4	0	32.4	18.9	0	0	10.9	0	2.2	.8	0	.5	4.9
W6.....	2.5	15.4	0	39.3	19.0	0	0	16.5	0	0	0	0	0	7.3
W8.....	1.0	14.6	0	37.2	23.0	0	0	12.5	6.8	0	0	0	1.7	3.2
W10.....	0	0	0	50.2	24.9	0	0	24.9	0	0	0	0	0	0

TABLE 9.—Land use distribution¹ in each watershed, 1937-39—Continued1939 ³

Watershed	Meadow	Pasture	Johnson grass and idle land	Intertilled crops				Drilled or broadcast crops			Other crops	Fallow	Farmsteads	Roads
				Cotton	Corn	Sorghum	Millet and Sudan grass	Oats	Sorghum	Millet and Sudan grass				
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
A	0	16.2	0	30.7	29.2	7.5	0	0	3.9	3.1	9.4	0	0	0
C	0	14.4	11.1	28.1	22.7	5.2	4.9	.4	3.0	.9	2.3	2.1	1.3	3.6
D	0	11.0	6.4	29.2	25.6	5.1	3.8	2.7	4.1	.7	4.4	2.4	1.4	3.2
G	2.1	12.3	1.9	30.7	25.0	3.6	2.2	4.5	3.8	1.7	4.5	3.8	1.4	2.5
J	2.8	12.9	1.8	30.6	24.2	3.3	2.6	4.4	4.0	1.9	4.7	3.1	1.4	2.3
Z	18.0	17.1	.2	24.7	19.8	4.4	2.3	4.4	2.8	1.1	1.3	0	1.7	2.2
Y	1.5	17.0	0	37.0	20.5	1.5	.5	10.6	7.5	2.2	0	0	.5	1.2
Y2	0	6.9	0	44.4	22.5	13.9	0	11.2	0	0	0	0	0	1.1
Y4	0	9.0	0	42.5	20.6	14.6	0	12.4	0	0	0	0	0	.9
Y6	0	0	0	49.3	24.7	0	0	25.1	0	0	0	0	0	0
Y7	0	0	0	31.1	37.4	0	0	15.6	15.9	0	0	0	0	0
Y8	0	0	0	49.5	24.0	0	0	24.0	0	0	0	0	0	2.5
Y10	0	0	0	48.7	24.4	0	0	24.4	0	0	0	0	0	2.5
W1+W2	5.7	12.6	.5	38.7	20.0	.5	0	11.8	4.5	1.0	0	0	1.2	3.5
W1	3.2	6.1	.4	43.8	22.1	.9	0	12.5	5.0	1.8	0	0	1.6	2.6
W2	9.0	21.5	.8	31.7	16.9	0	0	10.7	3.8	0	0	0	.7	4.9
W6	2.5	15.2	0	36.4	19.7	0	0	19.0	0	0	0	0	0	7.2
W8	1.7	14.4	0	39.7	20.7	6.7	0	12.5	0	0	0	0	1.2	3.1
W10	0	0	0	50.0	24.8	0	0	25.2	0	0	0	0	0	0

¹ For location of cultivated fields within the watersheds see figures 5, 6, and 7.² In 1938 small watersheds Nos. 2, 3, 5, 6, 7, 11, 13, 14, 16, 17, and 18 in 100 percent corn; small watershed No. 12 in 100 percent meadow; plots Nos. 1, 2, 3, and 4 in 100 percent oats.³ In 1939 small watersheds Nos. 2, 3, 5, 6, 7, 11, 13, 14, 16, 17 and 18 in 100 percent cotton; small watershed No. 12 in 100 percent meadow; plots Nos. 1 and 3 in 100 percent cotton; plot No. 4 in 100 percent oats; plot No. 2 in 100 percent corn.

TABLE 10.—Semimonthly record of cover and soil, 1938-39

Date	Meadow				Pasture				Cotton				Corn			
	Cover		Soil		Cover		Soil		Cover		Soil		Cover		Soil	
	Description	Height	Condition ¹	Depth of surface-moisture penetration	Description	Height	Condition ¹	Depth of surface-moisture penetration	Description	Height	Condition ¹	Depth of surface-moisture penetration	Description	Height	Condition ¹	Depth of surface-moisture penetration
<i>1938</i>		<i>Inches</i>		<i>Inches</i>		<i>Inches</i>		<i>Inches</i>		<i>Inches</i>		<i>Inches</i>		<i>Inches</i>		<i>Inches</i>
Oct. 1	Heading	9-12	6		Dry, closely grazed		6		Cotton stalks		5		Dry stalks		5	
Oct. 15	Headed	9-12	6		do		6		do		5		do		5	
Nov. 1	Dormant	9-12	6		do		6		do		5		do		5	
Nov. 15	do	9-12	7	6	do		7	6	do		5		do		7	3
Dec. 1	do	9-12	6		do		6		do		5		do		7	6
Dec. 15	do	9-12	6		do		6		do		5		do		7	6
<i>1939</i>																
Jan. 1	do	9-12	8	20	do		8	20	do		9	24	do		7	12
Jan. 15	do	9-12	8	26	do		8	26	Bedded land		2		Bedded land		2	
Feb. 1	do	9-12	7	36	Winter grass, bur-clover.		7	36	do		3		do		3	
Feb. 15	do	9-12	10	30	do		10	30	do		3		do		3	
Mar. 1	do	9-12	10	48	do		10	48	do		2		do		2	
Mar. 15	New growth begun.	0-2	9	48	New growth grass, closely grazed.		9	48	do		3		Planted		3	
Apr. 1	Young	4-6	9	48	do		9	48	do		3		Young	4-10	3	
Apr. 15	do	10-12	5		do		5		80 percent planted		3		do	6-18	3	
May 1	Booting, thin	12	5		Dry, closely grazed		5		100 percent planted	0-3	3		Booting	20-30	4	
May 15	do	12	5		do		5		2-5 leaves, 15 percent replanted.	4-5 { 0-2	3		Tasseling	24-60	4	
June 1	Heading, thin	12	9	12	do		9	12	70 percent squaring	6-10	3		Silking, 80 percent weedy.	30-72	4	
June 15	Headed, thin	14	9	12	do		9	12	Squaring	8-12	4		Eared, 80 percent weedy.	30-72	4	
July 1	Stubble	3	5		do		5		Bolling root rot appearing.	10-24	4		do	30-72	5	
July 15	Second growth	0-2	6		do		6		Bolling, root rot extensive.	18-24	4		Near mature, 80 percent weedy.	30-72	5	
Aug. 1	do	6-12	6		do		6		Most bolls grown	18-24	5		Mature, 80 percent weedy.	30-72	5	
Aug. 15	Second growth, thin.	6-12	6		do		6		Picking begun	18-24	5		do		5	
Sept. 1	do	8-14	7	6	do		7	6	Most bolls open		5		Harvesting begun, 80 percent weedy.		5	
Sept. 15	Heading, thin	10-15	6		do		6		90 percent picked		5		Harvesting, 80 percent weedy.		5	
Oct. 1	do	10-15	6		do		6		Harvest complete		5		Corn stalks, weedy, 20 percent bedded.		5	
Oct. 15	do	10-15	7	6	do		7	6	Cotton stalks		7	8	60 percent corn stubble, 40 percent bedded.		7	8
Nov. 1	Dormant, thin	10-15	7	6	do		7	6	60 percent cotton stubble, 40 percent bedded.		7	8	40 percent corn stubble 60 percent bedded.		7	8
Nov. 15	do	10-15	7	6	do		7	6	60 percent bedded		7	12	80 percent bedded		7	12
Dec. 1	do	10-15	7	12	do		7	12	70 percent bedded		7	18	90 percent bedded		7	18
Dec. 15	do	10-15	7	12	Winter grass, bur-clover, young.	0-2	7	12	Bedded		7	18	Bedded		7	18

See footnotes at end of table.

TABLE 10.—Semimonthly record of cover and soil, 1938-39—Continued

Date	Sorghum (row)				Oats				Sorghum (drilled)			
	Cover		Soil		Cover		Soil		Cover		Soil	
	Description	Height	Condition ¹	Depth of surface-moisture penetration	Description	Height	Condition ¹	Depth of surface-moisture penetration	Description	Height	Condition ¹	Depth of surface-moisture penetration
		Inches		Inches		Inches		Inches		Inches		Inches
1938												
Oct. 1	50 percent second growth		5		Plowed land		5		Plowed land		5	
Oct. 15	50 percent bedded		5		do		5		do		5	
Nov. 1	do		5		Planted		5		do		5	
Nov. 15	do		7	3	do		7	3	do		7	3
Dec. 1	do		7	6	Young	0-2	7	6	do		7	6
Dec. 15	do		7	6	do		7	6	do		7	6
1939												
Jan. 1	do		7	12	do	1-2	2		do		2	
Jan. 15	Bedded		2		do		3		do		3	
Feb. 1	do		3		do		3		do		3	
Feb. 15	do		3		do		2		do		2	
Mar. 1	do		2		do	2-3	3		do		3	
Mar. 15	do		3		do	2-4	3		do		3	
Apr. 1	Planted		3		do	5-7	3		Planted		3	
Apr. 15	Coming up	0-2	3		Booting	9-11	3		Coming up	0-2	3	
May 1	Young	4-8	4		Heading	12-36	5		Young	2-6	4	
May 15	do	10-18	4		In dough	24-36	5		do	6-12	4	
June 1	Young, 50 percent weedy	24-36	4		75 percent harvested		4		Booting	12-14	4	
June 15	Booting, 50 percent weedy	48-72	4		Stubble		4		Booted	24-48	4	
July 1	Booted, 50 percent weedy	48-84	5		50 percent plowed		4		Headed	36-60	5	
July 15	Headed, 50 percent weedy	60-96	5		75 percent plowed		4		75 percent harvested		5	
Aug. 1	75 percent harvested, 50 percent weedy		5		do		4		Second growth, 50 percent plowed	2-6	5	
Aug. 15	Harvested, 50 percent weedy		5		do		4		do	4-8	5	
Sept. 1	Second growth, 20 percent bedded	4-10	5		80 percent plowed		4		Second growth, 60 percent plowed	6-12	5	
Sept. 15	Second growth, 40 percent bedded	10-20	5		do		4		Second growth, 80 percent plowed	12-36	5	
Oct. 1	Second growth, 50 percent bedded	18-24	5		Plowed		4		do	12-36	5	
Oct. 15	Second growth, 80 percent bedded	18-24	7	8	Planted		7	8	Second growth, 90 percent plowed	12-36	7	8
Nov. 1	90 percent plowed		7	8	Oats	3-5	7	8	90 percent plowed		7	8
Nov. 15	do		7	12	do	2-4	7	12	do		7	12
Dec. 1	do		7	18	do		7	18	do		7	18
Dec. 15	do		7	18	do	3-5	7	18	do		7	24

¹ Numbers in these columns indicate the following soil conditions: 1, nearly saturated, surface muddy, ground water at high level; 2, too wet for tillage, no free water in surface 12 inches, subsurface near saturation; 3, surface 12 inches moist, subsurface moist, no free water to depth of 5 feet or more; 4, surface 12 inches moderately dry, subsurface moist; sufficient moisture for plant growth; 5, surface 12 inches very dry,

cracks $\frac{1}{2}$ to 1 inch wide and 1 to 2 feet deep; moisture inadequate to maintain normal plant growth; 6, very dry, cracks 1 to 2 inches wide and 3 to 5 feet deep; soil moisture inadequate to maintain plant growth; 7, surface moist, subsurface dry and severely cracked; 8, surface wet, subsurface dry and severely cracked; 9, surface moist, subsurface medium dry; 10, surface wet, subsurface medium dry.

TABLE 11.—Summary of rainfall and run-off from watershed J, June 24, 1937, to December 31, 1939

LOCATION: Latitude 31°27'54", longitude 96°50'59".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 35,800 feet (6.8 miles). Area, 9.16 square miles (5,860 acres).

Shape factor.—0.199.

Slope.—17 percent of watershed has a slope of less than 1 percent; 69 percent, 1 to 3 percent; 11 percent, 3 to 6 percent; 3 percent, exceeding 6 percent. Average slope is 2.14 percent.

Soil.—Predominating soil is Houston black clay. The depth to slightly weathered substrata as a rule is 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—The stream channels, especially in the lower third of the watershed, are fairly well defined, the low water channel of Brushy Creek being cut as deep as 12 feet near the outlet. Many of the numerous tributaries are cut several feet into the soil, and some into the underlying material. There are many field gullies, and on several fields there is considerable sheet erosion.

Special features.—Roads and farmsteads occupy nearly 4 percent of the area. The watershed divides are very flat and subject to changes caused by the direction of deep furrows.

LAND USE:

Plan.—Prevailing practices with rotations on some fields.

Vegetal cover and soil condition.—See figure 5 and tables 9 and 10.

MEASUREMENTS:

Precipitation.—On December 31, 1939, there were 23 recording rain gages and 78 nonrecording rain gages serving the watershed as shown in figure 1. The maximum and average rainfall intensities were obtained from stations 14, 69, and 85. The amount of rainfall was obtained by the Thiessen average of the amounts collected in the recorders. Snowfall was measured by weighing-recording rain gages.

Run-off.—Run-off was measured by Columbus low-water weir, current-meter measurements, slope record, and FW-1 water-stage recorders. The records of run-off are excellent for all stages except those below 100 second-feet on January 23 and April 15, 1938, those above 100 second-feet on February 18, 1938, and those computed by slope records above 250 second-feet on May 18 and 20, 1939, which are fair.

Soil loss.—Records of soil loss were obtained by manual sampling of the run-off waters.

Ground-water levels.—27 recording and 104 nonrecording wells (fig. 3) indicated the fluctuation of the ground water beneath this watershed.

Changes during year.—During May 1938 the deep-notch Columbus weir was replaced by a one-on-five Columbus

TABLE 11.—Summary of rainfall and run-off from watershed J, June 24, 1937, to December 31, 1939—Continued

weir, the approach was raised slightly, and the channel was straightened above and below the station.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1938, 26.46 inches; 1939, 25.30 inches. Maximum 5 minutes, 6.48 inches per hour, March 28, 1938. Maximum 15 minutes, 4.20 inches per

hour, June 6, 1937. Maximum 30 minutes, 3.00 inches per hour, June 6, 1937.

Run-off.—Annual run-off amount 1938, 3.50 inches; 1939, 0.59 inch. Maximum rate of run-off, 0.146 inch per hour (862 second-feet), January 23, 1938. No flow for long periods.

Date	Rainfall							Run-off							
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period					In. per hr.	In. per hr.			
1937		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
June:															
1 to 4			0.33												
4	5:30 a. m.	4 38	.63	0.60	0.44	0.36	0.14								
4 to 6			.10												
6	12:30 a. m.	50	.57	1.92	1.32	.84	.68								
6	6:18 a. m.	1 43	1.29	4.80	4.20	3.00	.75								
7	6:14 a. m.	2 46	.37	2.04	1.48	.88	.14								
7 to 16			0												
16	6:18 a. m.	3 42	.53	1.08	.56	.46	.14								
16 to 24			0												
24 to 30			.04					12:00 p. m. (24)	12:00 p. m. (30)	0					
Total			3.86												
July:															
1 to 9			0					12:01 a. m. (1)	10:17 a. m. (9)	0					
9	9:50 a. m.	3 12	.31	1.80	.64	.34	.10	10:17 a. m.	6:00 p. m.	0	T	0.020			
9 to 10			.24							0					
10	11:00 a. m.	2 47	.40	.48	.40	.30	.14			0					
10 to 31			.13							0					
Total			1.08							T					
August:															
1 to 5			0							0					
5	6:05 p. m.	29	.12	2.16	1.00	.24	.25			0					
5 to 15			0							0					
15	11:00 a. m.	2 28	.20	.96	.64	.32	.08			0					
15 to 24			.04							0					
24	5:59 p. m.	2 1	.64	2.16	1.60	1.08	.32			0					
24 to 31			.09							0					
Total			1.09							0					
September:															
1 to 2			0							0					
2	8:42 a. m.	3 37	.73	1.92	1.40	1.12	.20			0					
2 to 6			0							0					
6	9:20 p. m.	2 15	.22	.48	.28	.14	.10	9:25 a. m.	9:25 a. m. (6)	0	T	.118	3:49 p. m.	6 24	
6	6:20 p. m.	3 57	.66	2.28	1.04	.78	.17	7:04 p. m.	12:00 p. m.	0	T	.012			
7	1:40 p. m.	46	.45	3.84	3.12	1.82	.58	12:00 p. m. (6)	12:00 p. m. (30)	0					
7 to 30			.05							0					
Total			2.11							T					
October:															
1 to 9			0							0					
9	7:10 a. m.	2 55	.33	.72	.40	.28	.11			0					
9 to 13			0							0					
13	5:00 a. m.	13 20	1.64	.72	.56	.56	.12			0					
13 to 16			0							0					
16	12:40 p. m.	1 50	.25	.96	.52	.36	.13			0					
17	2:00 a. m.	8 17	.75	1.44	.88	.48	.09			0					
17 to 31			0							0					
Total			2.97							0					
November:															
1 to 8			.11							0					
8	11:20 a. m.	4 11	.22	.48	.24	.12	.05			0					
8	11:22 p. m.	13 34	2.60	2.88	2.04	1.42	.19	12:20 a. m. (9)	12:00 p. m. (9)	.0087	5.4	0.0026	5:10 a. m. (9)	4 50	
9 to 22			0					12:00 p. m. (9)	1:05 p. m.	0					
22	8:30 a. m.	11 45	2.41	.12	.08	.08	.03	1:05 p. m.	8:00 p. m. (23)	0	T	.025	12:00 p. m.	10 55	
23 to 30			0							0					
Total			3.34							.0087					

¹ When date is other than that in column 1, date is in parentheses following the time.

² Snow.

TABLE 11.—Summary of rainfall and run-off from watershed J, June 24, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Silt loss
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period					Sec.-ft.	In. per hr.			
1937		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
December:															
1 to 13			.10							0					
13	6:30 p. m.	5 40	.12	0.36	0.16	0.08	0.02	9:55 p. m.	1:01 a. m. (14)	T	0.007		12:40 a. m. (14)	2 45	
15			.19							0					
15	2:00 a. m.	2 36	.27	.24	.20	.16	.10	5:00 p. m.			.010		5:45 p. m.	45	
15 to 16			.12							T					
16 to 19	2:32 a. m. (16)	17 28	.94	.48	.36	.26	.05	6:26 p. m. (16)	6:26 p. m. (16)	.0037	2.24	.0004			
19 to 22			.05					6:00 p. m. (19)	3:30 a. m. (22)	0					
22 to 24	1:40 a. m.	11 21	1.34	.72	.48	.34	.12	3:30 a. m. (22)	12:00 p. m. (24)	.1385	70.0	.0118	6:36 p. m.	3 6	
24 to 28			.12					12:00 p. m. (24)							
28	3:00 a. m.	9 34	.38	.60	.40	.24	.04				2.98	.0003			
28 to 31			.10						12:00 p. m. (31)	.0140					
Total			3.73							.1562					
1938															
January:															
1-5			0					12:01 a. m. (1)	3:30 p. m. (5)	.0002					
5-9	2:26 p. m. (5)	12 34	.68	.24	.12	.12	.05	3:30 p. m. (5)	6:45 a. m. (9)	.0039	1.72	.0003			
9	6:40 a. m.	9 47	.20	.24	.20	.12	.02	6:45 a. m.			.0575		12:00 p. m.	17 15	
10			.02												
20			.12												
20			0					11:15 p. m. (20)	11:15 p. m.	.0012					
21	4:30 a. m.	16 58	.52	.48	.20	.16	.03								
21-23			0					12:50 a. m.	12:50 a. m. (23)	.0065					
23	12:20 a. m.	13 15	2.56	1.68	1.00	.54	.19	12:50 a. m.		862	.146		10:30 a. m.	9 40	
24			.03												
24-26			0					12:00 p. m. (26)	12:00 p. m. (31)	1.46					
26-31			0					12:00 p. m. (26)		.0024					
Total			4.13							1.47					
February:															
1-16			0					12:01 a. m. (1)	1:45 p. m. (16)	.0009					
16	10:00 a. m.	7 0	1.44	4.20	2.56	1.48	.20	1:45 p. m.		312	.0528		6:00 p. m.	4 15	
17			.03						11:12 p. m.	.2500					
17	10:35 p. m.	2 40	.56	.60	.40	.24	.20	11:12 p. m.		188	.0326		3:50 a. m. (18)	4 38	
17-21			0					8:30 a. m.	8:30 a. m. (21)	.2530					
21	6:43 a. m.	7 7	.62	.48	.32	.26	.09	8:30 a. m.			85.2	.0144	2:45 p. m.	6 15	
23			0					12:00 p. m.	12:00 p. m.	.1328					
23-28			0					12:00 p. m. (23)	12:00 p. m. (28)	.0068					
Total			2.65							.64					
March:															
1-22			.29					12:01 a. m. (1)							
22	12:00 m.	1 55	.60	1.44	1.20	1.00	.30								
22-27			.01					12:25 p. m. (27)	12:25 p. m. (27)	.0036					
27-28	12:00 a. m. (26)	5 10	1.12	1.44	.96	.52	.22	12:25 p. m. (27)	3:45 p. m. (28)	.091	72.3	.0122			
28	3:40 p. m.	2 10	1.00	6.48	2.60	1.40	.46	3:45 p. m.		351	.0594		10:00 p. m.	6 15	
28-31			.01					12:00 p. m. (31)		.4202					
Total			3.03							.51					
April:															
1-6			0					12:01 a. m.							
6	9:58 p. m.	1 12	.13	.84	.48	.28	.10	4:35 a. m.	4:35 a. m. (7)	.0017					
7	4:05 a. m.	3 21	.57	.48	.40	.28	.17	4:35 a. m.	12:00 p. m. (8)	.0051	3.10	.0005			
8-15			0					12:00 p. m. (8)	1:00 a. m. (15)	.0003					
14	11:30 p. m.	15 27	2.29	2.28	1.08	.64	.15	1:00 a. m. (15)			514	.0870			
17-18			.13					12:00 p. m. (18)	12:00 p. m. (18)	.7836					
18-26			.15					6:05 a. m.	6:05 a. m. (26)	.0011					
26	5:50 a. m.	1 48	.31	.96	.56	.40	.17	6:05 a. m.			.148		12:30 p. m.	6 25	
27-28	5:50 a. m. (27)	5 9	.29	.72	.40	.24	.06		8:00 a. m. (28)	.0007					
28-30			0					8:00 a. m. (28)	12:00 p. m. (30)	.0003					
Total			3.87							.79					
May:															
1-4			0					12:01 a. m. (1)							
4	12:35 a. m.	2 45	.26	1.08	.40	.22	.09								
4-7			.01												
7	8:15 a. m.	8 0	.38	.24	.20	.16	.05								
7-13			.14												
13	12:08 a. m.	2 52	.62	1.92	1.20	.76	.22								
14			0					12:00 p. m. (14)	12:00 p. m.	.0006					
14-23			.11					12:00 p. m. (14)							
23	12:22 a. m.	2 8	.96	3.24	1.96	1.18	.45			0					
23-31			0						12:00 p. m. (31)	0					
Total			2.48							.0006					

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 11.—Summary of rainfall and run-off from watershed J, June 24, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
June:			In.	per hr.	per hr.	per hr.	per hr.			In.					
1-4			0					12:01 a. m. (1)							
4	3:14 a. m.	3 17	.74	2.76	1.52	0.86	0.22								
4-8			0												
8	12:30 p. m.	2 20	.61	.84	.44	.34	.26								
9	2:00 a. m.	6 0	.31	.24	.20	.18	.05								
9-16			.06												
16-17	6:30 p. m. (16)	11 45	1.30	1.20	.88	.66	.11	11:28 a. m. (17)	11:28 a. m. (17)	0	28.9	0.0049	12:15 p. m. (17)	57	
17-21			0					12:33 p. m. (21)	12:33 p. m. (21)	.031					
21-23	12:20 p. m. (21)	1 35	.72	2.16	1.36	.80	.46	12:33 p. m. (21)	11:00 a. m. (23)	.041	22.7	.0038			
23-26			0					11:00 a. m. (23)	12:00 p. m. (26)	.0004					
26-30			0					12:00 p. m. (26)	12:00 p. m. (30)	0					
Total			3.74							.0726					
July:															
1-9			.01					12:01 a. m. (1)							
9	4:22 p. m.	1 28	.17	1.80	1.28	.92	.12								
9-19			.05												
19	6:20 a. m.	5 40	.46	.60	.44	.32	.08								
19-22			.07												
22	3:30 a. m.	7 30	.37	.36	.28	.22	.05								
23	8:00 a. m.	5 0	.29	.12	.12	.10	.06								
24	7:00 a. m.	4 45	.37	2.28	1.96	1.20	.08								
24-31			.04						12:00 p. m. (31)	0					
Total			1.46							0					
August:															
1-10			.01					12:01 a. m. (1)							
10	2:47 p. m.	2 54	.56	1.56	1.00	.54	.19								
10-31			0						12:00 p. m. (31)	0					
Total			.57							0					
September:															
1-11			.15					12:01 a. m. (1)							
11	9:18 a. m.	2 37	.76	2.16	1.76	1.12	.29								
11-30			.03						12:00 p. m. (30)	0					
Total			.94							0					
October:															
1-31			.12					12:01 a. m. (1)	12:00 p. m. (31)	0					
November:															
1-3			.10					12:00 a. m. (1)							
3	9:40 a. m.	4 5	.34	1.20	.48	.30	.08								
3-30			.40						12:00 p. m. (30)	0					
Total			.84							0					
December:															
1-22			.27					12:01 a. m. (1)							
22	1:00 p. m.	6 0	1.50	2.40	1.16	.90	.25								
23-25			.22												
25-26	6:00 a. m. (25)	18 10	.64	.24	.12	.10	.03								
26-31			0						12:00 p. m. (31)	0					
Total			2.63							0					
1939															
January:															
1-8			.03					12:01 a. m. (1)							
8	4:00 p. m.	3 30	.95	1.68	1.24	1.08	.27								
8-11			.21						12:30 p. m. (11)	T					
11-16	10:00 a. m. (11)	17 49	1.96	.84	.48	.38	.11	12:30 p. m. (11)	10:00 p. m. (16)	.0167	8.39	.0014			
16-23			.32					10:00 p. m. (16)							
23	4:15 a. m.	6 40	.31	.60	.24	.12	.05								
23-31			.04						12:00 p. m. (31)	0					
Total			3.82							.0167					
February:															
1-17			.51					12:01 a. m. (1)							
17	10:30 a. m.	5 37	.38	2.28	1.20	.66	.07								
17-19			.84	.60	.40	.30	.11		4:50 a. m. (19)	0					
19-21	9:00 p. m. (18)	7 47	0					4:50 a. m. (19)	12:00 p. m. (21)	.0026	1.04	.0002	7:00 a. m. (19)	2 10	
21-25			.11					12:00 p. m. (21)	5:40 a. m. (25)	T					
25	4:30 a. m.	7 25	1.04	1.08	.92	.84	.14	5:40 a. m.			27.3	.0046			
25-28			.06						12:00 p. m. (28)	.0498					
Total			2.94							.0524					

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 11.—Summary of rainfall and run-off from watershed J, June 24, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Silt loss
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period					5-minute period	15-minute period			
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In. T	Sec. ft.	In. per hr.	Hr. min.	Ton. per acre	
March:															
1-25			.09					12:01 a. m. (1)	12:00 m. (25)	0					
25	6:51 a. m.	3 36	1.01	1.56	1.20	0.90	9.28	12:00 m. (1)	8:24 a. m. (26)	.0002	0.296				
26-28			.02					8:24 a. m.	12:00 m. (26)						
28-31			.02					12:00 m. (26)	6:00 a. m. (28)	0					
								6:00 a. m. (28)	12:00 p. m. (31)	0					
Total			1.14							.0002					
April:															
1-16			.22					12:01 a. m. (1)							
16	4:40 a. m.	13 20	.32	.48	.36	.28	.02		12:00 p. m. (30)	0					
16-30			.34												
Total			.88							0					
May:															
1-7			0					12:01 a. m. (1)							
7	4:22 p. m.	1 28	.44	1.68	.96	.68	.30								
7	9:48 p. m.	1 32	.28	.84	.48	.44	.18								
7-16			.08												
16	4:41 a. m.	3 49	1.32	2.40	1.56	1.30	.34	3:53 p. m.	3:53 p. m. (16)	0	3.63	.0006			
16-17			.06												
17	6:14 a. m.	1 58	.81	2.76	2.04	1.36	.41	6:28 a. m.	6:28 a. m. (17)	.0031					
17	6:30 p. m.	2 12	.36	.80	.48	.36	.16	8:30 p. m.	8:30 p. m.	.0820	86.4	.0146			
18	6:30 a. m.	1 48	.40	3.00	1.28	.68	.22	8:30 p. m.	6:55 a. m. (18)	.0311	27.9	.0047		.0143	
19-20			.04					6:55 a. m.							
20-22	12:30 a. m. (20)	1 39	.84	1.44	1.28	1.04	.47	1:00 a. m. (20)	1:00 a. m. (20)	.1322			8:15 a. m.	1 20	
22-31			.04					12:00 p. m. (22)	12:00 p. m. (22)	.2554	304	.0515	2:28 a. m. (20)	1 28	
Total			4.67					12:00 p. m. (22)	12:00 p. m. (31)	.50				.1186	
June:														.1489	
1-4			.18					12:01 a. m. (1)							
4	4:30 a. m.	5 15	.89	3.12	1.04	.52	.17								
4-19			.25						9:08 p. m. (19)	0					
19	9:10 a. m.	4 17	1.28	2.64	2.04	1.54	.30	9:08 p. m.	12:00 p. m. (22)	.0244					
19-22			.07					12:00 p. m. (22)	12:00 p. m. (30)	0					
22-30			0												
Total			2.67							.0244					
July:															
1-31			.34					12:01 a. m. (1)	12:00 p. m. (31)	0					
August:															
1-4			.08					12:01 a. m. (1)							
4	8:30 a. m.	4 15	.80	3.72	3.20	2.50	.19								
4-19			.15												
19	5:34 p. m.	1 56	1.10	2.40	1.60	1.30	.57								
20	2:28 p. m.	4 2	.67	.96	.76	.70	.17								
20-31			.38						12:00 p. m. (31)	0					
Total			3.18							0					
September:															
1-29			.20					12:01 a. m. (1)							
29	2:15 p. m.	1 40	.32	1.68	1.16	.62	.19								
29-30			0						12:00 p. m. (30)	0					
Total			.52							0					
October:															
1-8			0					12:01 a. m. (1)							
8	1:04 p. m.	56	.39	2.04	1.24	.78	.42								
9			.01												
9	7:50 a. m.	8 11	1.35	.84	.56	.36	.16								
10-31			.19						12:00 p. m. (31)	0					
Total			1.94							0					
November:															
1-11			.24					12:01 a. m. (1)							
11	3:30 a. m.	3 45	.26	.36	.24	.18	.07								
11	9:00 a. m.	8 15	.83	.48	.44	.40	.10								
11-29			.25												
29	2:00 p. m.	21 33	.62	.36	.16	.12	.03								
30			0						12:00 p. m.	0					
Total			2.20							0					
December:															
1-22			0					12:01 a. m. (1)							
22	4:30 a. m.	8 15	.76	.72	.48	.32	.09								
22-31			.24						12:00 a. m. (31)	0					
Total			1.00							0					

¹ When date is other than that in column 1, the date is in parentheses following the time.³ Estimated.

TABLE 12.—Summary of rainfall and run-off from watershed Y, April 22, 1937, to December 31, 1939

LOCATION: Latitude 31°28'36", longitude 96°52'36".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 5,040 feet. Area, 0.48 square mile (309 acres).*Shape factor*.—0.531.*Slope*.—3 percent of the watershed has a slope of less than 1 percent; 79 percent, 1 to 3 percent; 18 percent, 3 to 6 percent. Average slope is 2.41 percent.*Soil*.—Predominating soil is Houston black clay. The depth to slightly weathered substrata as a rule is 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.*Erosion conditions*.—The low water channels of the two principal branches and of the several tributaries of the stream are somewhat gullied and fairly well defined although they are well sodded immediately above the station. Near the northwest ridge of the watershed there are several outcroppings of chalk where the topsoil has been eroded. In the area Y-6 (fig. 2), there are several severely eroded field gullies.*Special features*.—Gravel highways and parts of two farmsteads occupy about 2 percent of the area. About 45 acres is privately owned and the drainage from part of this during certain seasons may be artificially diverted by cultivation as the topography is sufficiently flat to be affected by deep furrowing.

LAND USE:

Plan.—Prevailing practices with rotation (corn, cotton, oats, cotton) on some fields.*Vegetal cover and soil condition*.—See figures 6 and 7 and tables 9 and 10.

MEASUREMENTS:

Precipitation.—Precipitation was measured at 11 recording rain gages 69, 69a, 70, 70a, 75, 75a, 76, 82, 83, 84a, and 89

(fig. 2). The maximum and average rainfall intensities were obtained from gage 69 before May 1, 1938, and from 76 thereafter. No nonrecording rain gages were used after May 1, 1938. Before that time the only recording gage was at station 69; those at stations 70, 75, 76, 82, 83, and 89 were nonrecording. After May 1, 1938, the amount of rainfall was obtained by the Thiessen average of the amounts in the recording gages. Before that date it was obtained from station 69. Snowfall was measured by weighing-recording rain gages.

Run-off.—Run-off was measured by a Columbus deep-notch weir and current-meter measurements, with FW-1 water-stage recorder. The records of run-off are excellent below 75 second-feet, good between 75 and 150, and fair above 150 when all conditions were favorable. Intake stoppage, shifts in gage elevation, expansion of recorder paper, and other causes of minor errors may reduce the general accuracy of the records.*Soil loss*.—Records of soil loss are obtained by manual sampling of the run-off waters.*Ground-water levels*.—17 recording and 14 nonrecording wells were used to indicate the fluctuation of the water table beneath this watershed (fig. 4).*Changes during year*.—Only minor repairs and alterations were made. The station has functioned properly throughout the period of record.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1938, 26.06 inches; 1939, 24.56 inches. Maximum 5 minutes, 6.48 inches per hour, March 28, 1938. Maximum 15 minutes, 4.20 inches per hour, June 6, 1937. Maximum 30 minutes, 3.00 inches per hour, June 6, 1937.*Run-off*.—Annual run-off amount 1938, 3.72 inches; 1939, 0.606 inch. Maximum rate of run-off, 0.74 inch per hour (230 second-feet), February 16, 1938. No flow for long periods.

Date	Rainfall							Run-off							
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Total amount					
				5-minute period	15-minute period	30-minute period									
In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.	In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre						
April: 1937		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre
1-3			0												
3	1:30 p. m.	44	.72	3.72	2.00	1.22	0.98								
3-20			0												
20	9:08 p. m.	1 28	.47	1.56	1.20	.80	.32								
20-22			0												
22-23			0												
23	9:23 a. m.	16	.33	2.40	1.04	.66	1.24	3:25 p. m. (22)							
23-30			0						12:00 p. m. (30)	0					
Total			1.52												
May:															
1-3			0					12:01 a. m. (1)							
3	11:02 p. m.	58	.32	.96	.88	.60	.33								
3-31			.26												
31	2:18 a. m.	2 16	.67	2.40	1.12	.76	.30	2:30 a. m.	2:30 a. m. (31)	0	T	0.0252	0.0001		
31			0					3:00 p. m.	3:00 p. m.	0					
Total			1.25							T					

¹ When the date is other than that in column 1, date is in parentheses following the time.

TABLE 12.—Summary of rainfall and run-off from watershed Y, April 22, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Began ¹	Ended ¹	Amount						
				5-minute period	15-minute period	30-minute period				Average rate for duration of rain					
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
June: 1937															
1-4			0.38					12:01 a. m. (1)							
4	6:03 a. m.	3 45	.62	0.60	0.44	0.36	0.17								
4-6			.13												
6	12:30 a. m.	40	.44	1.92	1.32	.84	.66		6:27 a. m.	0					
6	6:27 a. m.	1 27	1.66	4.80	4.20	3.00	1.14	6:27 a. m.	6:30 a. m. (7)	.51	176	0.556	7:25 a. m.	58	
7	6:24 a. m.	1 36	.49	2.04	1.48	.88	.31	6:30 a. m.	12:00 p. m. (8)	.041	6.38	.0218	8:20 a. m.	1 50	
8-16			0					12:00 p. m. (8)							
16	6:36 a. m.	1 20	.40	1.08	.56	.46	.30								
16-27			0						12:00 p. m. (27)	T					
27-30			0					12:00 p. m. (27)	12:00 p. m. (30)	0					
Total			4.12							.56					
July:															
1-9			0					12:01 a. m. (1)							
9	10:11 a. m.	1 36	.32	1.80	.64	.34	.20								
9-10			.37												
10	11:04 a. m.	2 43	.35	.48	.40	.30	.13								
10-31			.08						12:00 p. m. (31)	0					
Total			1.12							0					
August:															
1-5			0					12:01 a. m. (1)							
5	6:25 p. m.	0 6	.25	2.16			2.50								
5-15			0												
15	12:27 p. m.	0 59	.25	.96	.64	.32	.26								
15-24			0												
24	6:48 p. m.	1 0	.30	.72	.60	.38	.31								
24-31			.11						12:00 p. m. (31)	0					
Total			.91							0					
September:															
1-2			0					12:01 a. m. (1)							
2	8:53 a. m.	1 56	.91	1.92	1.40	1.12	.47								
2-6			0												
6	6:40 p. m.	2 54	.76	2.28	1.04	.78	.26	1:53 p. m.	1:53 p. m. (7)	0					
7	1:52 p. m.	34	.96	3.84	3.12	1.82	1.70	1:53 p. m.	8:00 p. m.	.0016	1.63	.0052	2:09 p. m.	16	
7-30			.20					8:00 p. m. (7)	12:00 p. m. (30)	0					
Total			2.83							.0016					
October:															
1-9			0					12:01 a. m. (1)	7:30 a. m. (9)	0					
9	7:22 a. m.	2 2	.32	.72	.40	.28	.16	7:30 a. m.	8:00 p. m.	0	T	.0034	8:10 a. m.	40	
9-13			0					8:00 p. m. (9)	5:32 a. m. (13)	0					
13	5:25 a. m.	9 45	1.59	.72	.56	.56	.11	5:32 a. m.	1:00 a. m. (14)	.0001	.0205	.0001			
14-16			0					1:00 a. m. (14)	12:55 p. m. (16)	0					
16	12:55 p. m.	1 11	.28	.96	.52	.36	.24	12:55 p. m.	7:00 p. m.	0	T	.0121	1:23 p. m.	28	
16-17								7:00 p. m. (16)	2:00 a. m. (17)	0					
17	2:00 a. m.	6 0	.79	1.44	.88	.48	.13	2:00 a. m.	11:00 p. m.	.0005	.133	.0004			
17-31			0					11:00 p. m. (17)	12:00 p. m. (31)	0					
Total			2.98							.0006					
November:															
1-8			.14					12:01 a. m. (1)	12:35 p. m. (8)	0					
8	11:34 a. m.	2 45	.19	.48	.24	.12	.07	12:35 p. m.	12:20 a. m. (9)	0	T	.0011	1:10 p. m.	35	
9-11	12:02 a. m. (9)	11 49	2.55	2.88	2.04	1.42	.22	12:00 a. m. (9)	4:00 p. m. (11)	.0186	3.64	.0115	2:20 a. m. (9)	2 0	
11-22			0					4:00 p. m. (11)							
22	10:00 a. m.	9 50	.32	.12	.08	.08	.03								
22-30			0						12:00 p. m. (30)	0					
Total			3.20							.0186					
December:															
1-14			.20					12:01 a. m. (1)	3:40 p. m. (14)	0					
14	6:10 a. m.	2 20	.20	.12	.16	.16	.09	3:40 p. m.							
15	2:00 a. m.	2 36	.38	.24	.20	.16	.15				.0752	.0002	7:25 a. m.	15 45	
15-16			.02												
16	3:30 a. m.	15 20	.93	.48	.36	.26	.06	3:30 a. m.	3:30 a. m. (16)	.0029					
16			.05					12:00 p. m. (17)	12:00 p. m. (17)	.0611	2.22	.0070			
17-22			0					12:00 p. m. (17)	1:55 a. m. (22)	.0205					
22	1:50 a. m.	10 51	1.42	.72	.48	.34	.13	1:55 a. m.	12:00 p. m. (23)	.2505	18.0	.0569			
23-28			.08					12:00 p. m. (23)	4:10 a. m. (28)	.0436					
28	3:32 a. m.	8 17	.40	.60	.40	.24	.05	4:10 a. m.			3.18	.0101			
29			.09						12:00 p. m.	.0660					
29-31			0					12:00 p. m. (29)	12:00 p. m. (31)	.0102					
Total			3.77							.4548					

¹ When date is other than that in column 1, date is in parentheses following the time.² Snow.

TABLE 12.—Summary of rainfall and run-off from watershed Y, April 22, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Silt loss
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate	Time of maximum rate ¹	Period of rise		
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
January:			0					12:01 a. m. (1)	4:45 p. m. (5)	0.0047					
1-5			.67	0.24	0.12	0.12	0.06	4:45 p. m.	12:00 p. m. (6)	.0520	1.93	0.0061			
5	3:00 p. m.	11 0	0					12:00 p. m. (6)	8:25 a. m. (9)	.0045					
6-9			.21	.24	.20	.12	.02	8:25 a. m.	12:00 a. m. (10)	.0140	.532	.0017			
9	7:24 a. m.	9 29	.30					12:00 m. (10)	4:00 p. m. (21)	.0150					
10-21			.39	.48	.20	.16	.10	4:00 p. m. (21)	12:25 a. m. (23)	.0380	2.88	.0091			
21-23	3:45 p. m. (21)	3 50	2.65	1.68	.100	.54	.22	12:25 a. m.			74.2	.235			
23	12:25 a. m.	12 31	.04						12:00 p. m. (25)	1.62					
24-25			0					12:00 p. m. (25)	12:00 p. m. (31)	.0082					
25-31			4.26							1.76					
Total															
February:			0					12:01 a. m. (1)	1:42 p. m. (16)	.0073					
1-16			1.70	4.20	2.56	1.48	.29	1:42 p. m.	10:40 p. m. (17)	.55	.193	.610			
16	10:25 a. m.	5 50	.43	.60	.40	.24	.18	10:40 p. m.	12:00 p. m. (18)	.21	34.9	.110	12:25 a. m. (18)	1 45	
17	10:40 p. m.	2 22	0					12:00 p. m. (18)	6:45 a. m. (21)	.0059					
18-21			.58	.48	.32	.26	.09	6:45 a. m.	6:00 p. m. (22)	.22					
21	6:45 a. m.	6 25	0					6:00 p. m. (22)	12:00 p. m. (28)	.014					
22-28			2.71							1.00					
Total															
March:			.29					12:01 a. m. (1)	12:30 p. m. (22)	.012					
1-22			.60	1.44	1.20	1.00	.86	12:30 p. m.	12:00 p. m. (23)	.0010	.0153				
22	12:17 p. m.	42	0					12:00 p. m. (23)	12:00 p. m. (26)	.0009					
23-26			.70	1.44	.96	.52	.14	12:00 p. m. (26)	3:43 p. m. (28)	.0032	.0524	.0002			
26-28	12:00 p. m. (26)	5 8	1.05	6.48	2.60	1.40	.51	3:43 p. m.	12:00 p. m. (29)	.16	40.8	.129			
28	3:43 p. m.	2 3	0					12:00 p. m. (29)	12:00 p. m. (31)	.0032					
29-31			2.64							.182					
Total															
April:			0					12:01 a. m. (1)	10:04 p. m. (6)	.0012					
1-6			.71	.84	.48	.28	.19	10:04 p. m.	12:00 p. m. (7)	.0063	.192	.0006			
6	10:04 p. m.	3 43	0					12:00 p. m. (7)	3:28 a. m. (15)	.0042					
7-14			.59	2.28	1.08	.64	.34	3:28 a. m.	8:00 p. m. (16)	.66	66.4	.210			
14	11:51 p. m.	1 44	1.57	1.20	.76	.54	.18	8:00 p. m. (16)	6:05 a. m. (17)	.0013					
15	3:04 a. m.	8 33	0					6:05 a. m.	8:00 p. m. (18)	.052	4.11	.0130	7:20 a. m.	1 15	
16-17			.15	.24	.20	.18	.10	8:00 p. m. (18)	6:05 a. m. (26)	.0058					
17	5:59 a. m.	1 27	.12					6:05 a. m.	8:00 p. m.	.0066	.566	.0018			
18-26			.29	.96	.56	.40	.31	8:00 p. m. (26)	6:30 a. m. (27)	.0003					
26	5:57 a. m.	57	0					6:30 a. m.	11:00 p. m.	.0060	2.82	.0009			
26-27			.31	.72	.40	.24	.07	11:00 p. m. (27)	12:00 p. m. (30)	.0023					
27	6:15 a. m.	4 24	0												
27-30			3.74							.74					
Total															
May:			.23					12:01 a. m. (1)							
1-7			.36	.24	.16	.16	.07								
7	10:30 a. m.	5 30	.13						12:15 a. m. (13) ³	.0033					
7-13			.70	1.68	1.32	.76	.27	12:15 a. m.	12:00 p. m.	.0039	.199	.0006			
13	12:11 a. m.	2 34	.11					12:00 p. m. (13)	12:38 a. m. (23)	.0022					
13-23			.91	2.28	1.64	.94	.68	12:38 a. m.	2:00 p. m.	.011	.947	.0030			
23	12:30 a. m.	1 20	0					2:00 p. m. (23)	12:00 p. m. (31)	.0002					
23-31			2.44							.0206					
Total															
June:			0					12:01 a. m. (1)							
1-4			.91	2.76	1.52	.86	.28								
4	3:18 a. m.	3 13	0												
4-8			.36	.60	.48	.34	.19								
8	12:48 p. m.	1 52	0												
8-9			.34	.24	.24	.20	.08	2:15 a. m. (9)	2:15 a. m. (9)	T	.0321	.0001			
9-11	2:10 a. m. (9)	4 5	0					12:00 m. (11)	12:00 p. m. (14)	T					
11-14			0					12:00 p. m. (14)	8:05 p. m. (16)	0					
14-16			.88	1.92	.96	.78	.12	8:05 p. m.			.0631	.0002			
16	6:30 p. m.	7 4	0						6:00 a. m. (20)	.0008					
17-20			0					6:00 a. m. (20)	12:35 p. m. (21)	0	2.26	.0072			
20-21			.66	2.28	1.64	.86	.66	12:35 p. m.							
21	12:30 p. m.	1 0	0						5:00 p. m. (23)	.014					
21-23			0					5:00 p. m. (23)	12:00 p. m. (30)	0					
23-30			3.15							.0155					
Total															
July:			0					12:01 a. m. (1)							
1-9			.54	1.44	1.24	.88	1.25								
9	4:57 p. m.	0 26	.02												
9-19			.51	.48	.40	.28	.11								
19	6:30 a. m.	4 30	.12												
19-22			.37	.36	.28	.26	.05								
22	3:30 a. m.	7 0	.25	.24	.16	.12	.05								
23	8:00 a. m.	4 50	.09						12:00 p. m. (31)	0					
23-31			1.90							0					
Total															

¹ When date is other than that in column 1, date is in parentheses following the time.³ Estimated.

TABLE 12.—Summary of rainfall and run-off from watershed Y, April 22, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Silt loss
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	
				Maximum for—			Began ¹	Ended ¹	Amount						
				5-minute period	15-minute period	30-minute period				Average rate for duration of rain					
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
August:			0.06					12:01 a. m. (1)							
1-10			.70	1.80	1.12	0.70	0.79								
10	2:52 p. m.	53	0						12:00 p. m. (31)	0					
10-31			0												
Total			.76							0					
September:															
1-11			.08					12:01 a. m. (1)							
11	9:21 a. m.	2 34	.79	1.80	1.64	1.96	.31								
11-30			.05						12:00 p. m. (30)	0					
Total			.92							0					
October:															
1-31			.08							0					
November:															
1-3			.06					12:01 a. m. (1)							
3	9:55 a. m.	1 45	.35	.84	.52	.28	.20								
3-30			.34						12:00 p. m. (30)	0					
Total			.75							0					
December:															
1-22			.21					12:01 a. m. (1)							
22	1:00 p. m.	5 56	1.68	1.80	1.28	.86	.28								
22-25			.18												
25	6:00 a. m.	17 30	.64	.24	.12	.10	.04								
26-31			0						12:00 p. m. (31)	0					
Total			2.71							0					
1939															
January:															
1-8			0					12:01 a. m. (1)							
8	4:00 p. m.	3 27	.84	1.68	1.24	1.18	.24								
8-11			.28						11:53 p. m. (11)	0					
11	10:00 a. m.	17 55	2.11	.84	.56	.38	.12	11:53 p. m.	11:00 a. m. (13)	.014	1.22	0.0038			
11-23			.35					11:00 a. m. (13)							
23	4:30 a. m.	5 0	.26	.36	.20	.12	.05								
23-31			0						12:00 p. m. (31)	0					
Total			3.84							.014					
February:															
1-17			.48					12:01 a. m. (1)							
17	10:20 a. m.	5 10	.42	1.80	1.16	.64	.08		11:15 p. m. (18)	0					
18	11:00 p. m.	6 45	.78	.60	.36	.30	.12	11:15 p. m.	12:00 m. (20)	.0049	.566	.0018			
18-25			.09					12:00 m. (20)	5:25 a. m. (25)						
25	5:25 a. m.	7 15	1.03	1.20	1.08	.88	.14	5:25 a. m.	4:00 a. m. (27)	.046	4.44	.0140			
25-28			.06					4:00 a. m. (27)	12:00 p. m. (28)	0					
Total			2.86							.0509					
March:															
1-25			.18					12:01 a. m. (1)	8:21 a. m. (25)	0					
25	6:58 a. m.	4 5	1.03	2.04	1.32	1.00	.25	8:21 a. m.	10:00 a. m. (26)	.0007	.113	.0003			
26-31			.06					10:00 a. m. (26)	12:00 p. m. (31)	0					
Total			1.27							.0007					
April:															
1-30			.87							0					
May:															
1-7			0					12:01 a. m. (1)							
7	4:30 p. m.	53	.37	1.32	.80	.68	.42								
7	10:00 p. m.	1 30	.31	.96	.56	.52	.21								
7-16			.08												
16	4:53 a. m.	3 37	1.22	2.28	1.52	1.20	.34	5:55 a. m.	5:55 a. m. (16)	0	.0001	.0450	.0002		
16-17			.07						10:00 a. m.						
17	6:21 a. m.	1 42	.96	2.40	2.20	1.48	.56	10:00 a. m. (16)	6:25 a. m. (17)	0					
17	6:40 p. m.	2 10	.40	.60	.44	.32	.18	6:25 a. m.	6:40 p. m.	.1099	59.1	.187		0.168	
18	6:50 a. m.	51	.42	2.64	1.32	.68	.49	6:40 p. m.	6:52 a. m. (18)	.0470	13.4	.0392	8:33 p. m.	1 53	
18-20			.08					6:52 a. m.	6:00 p. m.	.126	73.4	.232	7:20 a. m.	28	
20	12:35 a. m.	1 41	.91	1.68	1.28	1.06	.54	6:00 p. m. (18)	12:40 a. m. (20)	.0002					
20-31			.03					12:40 a. m.	10:00 p. m.	.258	108	.341	1:40 a. m.	1	
Total			4.85					10:00 p. m. (20)	12:00 p. m. (31)	0				.225	

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 12.—Summary of rainfall and run-off from watershed Y, April 22, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period					Began ¹	Ended ¹	Amount		
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre
June:															
1-4			0.26					12:01 a. m. (1)							
4	4:30 a. m	4 27	.67	3.12	1.04	.52	.15								
4-19			.36												
19	9:16 a. m	3 29	1.18	2.52	1.96	1.58	.34								
19-30			.15						12:00 p. m. (30)	0					
Total			2.62							0					
July:															
1-31			.32							0					
August:															
1-19			.52												
19	6:09 p. m	1 21	.93	2.28	1.52	1.28	.69								
20	2:39 p. m	3 51	.61	.96	.80	.70	.16								
20-31			.25							0					
Total			2.31							0					
September:															
1-30			.52							0					
October:															
1-8			0												
8	1:18 p. m	22	.41	2.04	1.28	.76	1.12								
9			.06												
9	8:28 p. m	1 58	.39	.96	.60	.44	.20								
10	12:29 a. m	3 16	.66	1.32	1.00	.58	.20								
10-31			.31							0					
Total			1.83							0					
November:															
1-11			.23												
11	3:30 a. m	3 35	.26	.36	.24	.18	.07								
11	9:30 a. m	7 45	.74	.48	.44	.40	.10								
11-29			.29												
29	2:30 p. m	13 55	.66	.24	.12	.10	.04								
30			0							0					
Total			2.18							0					
December:															
1-22			0												
22	4:30 a. m	7 45	.59	.72	.44	.30	.08								
22-31			.50							0					
Total			1.09							0					

¹ When date is other than that indicated in column 1, the date is in parentheses following the time.

TABLE 13.—Summary of rainfall and run-off from watershed W1, June 22, 1937, to December 31, 1939

LOCATION: Latitude 31°27'27", longitude 96°52'48".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 5,400 feet. Area, 176 acres.

Shape factor.—0.262.

Slope.—11 percent of the watershed has a slope of less than 1 percent; 75 percent, 1 to 3 percent; 14 percent, 3 to 6. Average slope is 2.19 percent.

Soil.—Predominating soil is Houston black clay. The depth to slightly weathered substrata as a rule is 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—The one principal drainageway is well defined and considerably gullied in upper two-thirds of its length, but extends through a pasture in the lower third where it flattens out and disappears, becoming only a broad flood plain a short distance above the station. There are several other well-defined field gullies reaching into the main channel. There is very little evidence of serious sheet erosion.

Special features.—The waters are artificially concentrated at the measuring station by two dikes reaching about 400 feet across the flood plain, which will cause some temporary artificial detention of run-off at stages higher than any included in this period of record. One gravel highway along right boundary and one crossing the watershed, together

TABLE 13.—Summary of rainfall and run-off from watershed W1, June 22, 1937, to December 31, 1939—Continued

with two farmsteads, occupy about 4 percent of the area. About 10 acres is privately owned and the drainage from part of this area may be artificially diverted during certain seasons by cultivation as the topography is sufficiently flat to be affected by deep furrowing.

LAND USE:

Plan.—Prevailing practices with rotation (corn, cotton, oats, cotton) on some fields.

Vegetal cover and soil conditions.—See figures 6 and 7 and tables 9 and 10.

MEASUREMENTS:

Precipitation.—Precipitation was measured at 9 recording rain gages at stations 82, 89, W-1, W-1a, W-2, W-2a, W-3, W-3a, W-5 (fig. 2). The maximum and average rainfall intensities were obtained from station W-4 before May 1, 1938, and from W-2a thereafter. No nonrecording rain gages were used after May 1, 1938. Before that time the only recording gage was at station W-4; those at stations W-1, W-2, W-3, and W-5 were nonrecording. After May 1, 1938, the amount of rainfall on the watershed was obtained by the Thiessen average of the amounts collected in the recording gages; before that date it was obtained from station W-4. Snowfall was measured by weighing-recording rain gages.

Run-off.—Run-off was measured by a 15-foot flume-weir with

FW-1 water-stage recorders. The records of run-off are excellent below 20 second-feet and good above when all conditions were favorable. The presence of silt on the flume floor, intake stoppage or recording stages, shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of the records.

Soil loss.—Records of soil loss were obtained by manual sampling of the run-off waters.

Ground-water levels.—4 recording and 9 nonrecording wells (fig. 4) were used to indicate the fluctuation of the ground water beneath this watershed.

Changes during period.—A small trench was cut in the floor of the flume about March 1, 1938, to concentrate and prevent wind action on low flows.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1938, 26.33 inches; 1939, 24.36 inches. Maximum 5 minutes, 5.76 inches per hour, March 28, 1938. Maximum 15 minutes, 3.64 inches per hour, June 5, 1937. Maximum 30 minutes, 2.66 inches per hour, June 5, 1937.

Run-off.—Annual run-off amount 1938, 4.37 inches; 1939, 0.97 inch. Maximum rate of run-off, 0.60 inch per hour (106 second-feet), February 16, 1938. No flow for long periods.

Date	Rainfall							Run-off							
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period									
June: 1937		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Ton. per acre	
1-4			0.42												
4	6:10 a. m.	4 0	.65	0.72	0.60	0.44	0.16								
4			.03												
5	12:47 a. m.	23	.38	2.04	1.40	.76	.99								
5	6:32 a. m.	1 3	1.52	4.92	3.64	2.66	1.45								
5-7			0												
7	6:22 a. m.	38	.45	1.56	.96	.84	.71								
7-16			0												
16	6:45 a. m.	49	.34	1.08	.64	.48	.42								
16-19			0												
19	6:33 p. m.	27	.28	1.80	1.60	1.02	.62								
19-30			0					2:40 p. m. (23)	12:00 p. m. (30)	0.0031					
Total			4.07												
July:															
1-9			0					12:01 a. m. (1)	10:00 a. m. (9)	.0022					
9	10:05 a. m.	11 43	1.12	1.20	.72	.46	.10	10:00 a. m.	12:00 p. m. (10)	.0015	0.063	0.0004	6:25 p. m.		
10-14			0					12:00 p. m. (10)	12:00 p. m. (14)	.0011					
14-31			.10					12:00 p. m. (14)	12:00 p. m. (31)	0					
Total			1.22							.0048					
August:															
1-31			.75							0					
September:															
1-2			0					12:01 a. m. (1)	9:10 a. m. (2)	0					
2	8:50 a. m.	2 20	1.03	1.68	1.48	1.32	.44	9:10 a. m.	12:20 p. m.	.0001	.045	.0002			
2-6			0					12:20 p. m. (2)	5:40 p. m. (6)	0					
6	3:50 p. m.	3 32	2.92	3.96	3.64	3.32	.83	5:40 p. m.	2:50 p. m. (7)	.0339	6.60	.037	7:35 p. m.	1 55	
7	2:10 p. m.	1 4	.20	.48	.32	.24	.19	2:50 p. m.	12:00 p. m.	.0010	.028	.0002	3:05 p. m.		
7-10			0					12:00 p. m. (7)	9:00 p. m. (10)	.0001					
10			0					9:00 p. m.	12:00 p. m.	0					
10-11			0					12:00 p. m. (10)	12:35 a. m. (11)	T					
11	12:28 a. m.	38	.28	1.68	.88	.44	.44	12:35 a. m.	6:00 p. m. (12)	.0001	.022	.0001			
12-20			0					6:00 p. m. (12)	6:00 p. m. (20)	.0004					
20-30			0					6:00 p. m. (20)	12:00 p. m. (30)	0					
Total			4.43							.0356					

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 13.—Summary of rainfall and run-off from watershed W1, June 22, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Silt loss
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period					Began ¹	Ended ¹			
1937															
October:		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre
1-9			0					12:01 a. m. (1)							
9-13	7:25 a. m.	3 5	.36	0.72	0.60	0.46	0.12								
13-16	6:02 a. m.	6 57	1.57	1.20	.84	.74	.23								
16-17	12:41 p. m.	1 16	.29	.48	.36	.26	.23	11:40 p. m.	2:20 a. m. (17)	T	0.0011	0.0002			
17-19	1:30 a. m.	6 10	.59	1.08	.60	.32	.10	2:20 a. m.	12:00 p. m.	.0010	.040				
19-23			0					12:00 p. m. (17)	3:00 p. m. (19)	.0001					
23-31			0					3:00 p. m.	8:00 p. m.	0					
			0					8:00 p. m. (19)	12:00 m. (23)	.0002					
			0					12:00 m. (23)	12:00 p. m. (31)	0					
Total			2.85							.0013					
November:															
1-9			.30					12:01 a. m. (1)	12:25 a. m. (9)	0					
9-22	12:20 a. m.	8 19	2.83	3.12	2.60	.182	.34	12:25 a. m.	12:00 p. m.	.1314	8.22	.046			
22-25	5:20 p. m. (22)	10 55	1.42	.24	.20	.16	.04	12:00 p. m. (9)	5:20 p. m. (22)	.0045					
25-30			0					5:20 p. m. (22)	12:00 p. m. (25)	.0039	.15	.0008	5:35 p. m. (22)	5	
			0					12:00 p. m. (25)	12:00 p. m. (30)	.0029					
Total			3.55							.1427					
December:															
1-16			.61					12:01 a. m. (1)	3:00 a. m. (16)	.0097					
16-22	3:25 a. m.	14 43	1.04	.48	.38	.28	.07	3:00 a. m.	12:00 p. m. (17)	.0975	2.34	.013			
22-28	1:20 a. m.	12 10	.09	.60	.40	.34	.13	12:00 p. m. (17)	3:30 a. m. (22)	.0061		.071			
28-31			1.40	.60	.40	.34	.13	3:30 a. m.	12:00 p. m. (23)	.3796	12.6				
			.04					12:00 p. m. (23)	4:50 a. m. (28)	.0117					
	3:20 a. m.	3 49	.45	.36	.32	.22	.12	4:50 a. m.	12:00 p. m. (29)	.0318	.77	.0044			
			0					12:00 p. m. (29)	12:00 p. m. (31)	.0066					
Total			3.63							.5430					
1938															
January:															
1-5			0					12:01 a. m. (1)	4:00 p. m. (5)	.0112					
5-7	2:30 p. m.	11 10	.64	.12	.12	.10	.06	4:00 p. m.	12:00 p. m. (7)	.0380	.67	.0038	2:05 a. m. (6)	10 5	
7-21			.50					12:00 p. m. (7)	12:05 p. m. (21)	.0456					
21-22	11:45 a. m.	1 24	.18	.72	.28	.18	.10	12:05 p. m.	5:25 p. m.	.0090	.39	.0022			
22-23	3:50 p. m.	4 0	.24	.48	.24	.18	.04	5:25 p. m.	6:00 a. m. (22)	.0346	1.27	.0072	7:20 p. m.	1 55	
23-24			0					6:00 a. m.	12:00 a. m. (23)	.0086					
24-31	12:20 a. m.	12 38	2.52	1.68	.92	.60	.21	12:30 a. m.	7:00 p. m. (24)	1.9290	48.4	.27			
			.03					7:00 p. m. (24)	12:00 p. m. (31)	.0223					
Total			4.11							2.0983					
February:															
1-16			.03					12:01 a. m. (1)	12:00 m. (16)	.0477					
16-17	10:12 a. m.	4 36	1.66	3.12	2.32	1.50	.34	12:00 m.	4:00 p. m. (17)	.6136	106	.60			
17-18			0					4:00 p. m.	10:40 p. m.	.0020					
18-21	10:40 p. m.	2 30	.47	.48	.44	.30	.19	10:40 p. m.	12:00 p. m. (18)	.2000	18.02	.10	12:25 a. m. (18)	1 45	
21-22	6:50 a. m.	5 35	.68	.72	.44	.32	.12	12:00 p. m. (18)	6:45 a. m. (21)	.0098					
22-28			0					6:45 a. m.	2:00 p. m. (22)	.2000	7.83	.044			
			0					2:00 p. m. (22)	12:00 p. m. (28)	.0290					
Total			2.84							1.1021					
March:															
1-22			.23					12:01 a. m. (1)	12:28 p. m. (22)	.0417					
22-27	12:25 p. m.	40	.36	1.80	.80	.60	.54	12:28 p. m.	12:00 p. m.	.0014	.092	.0005	1:10 p. m.	32	
27-28			0					12:00 p. m. (22)	12:30 a. m. (27)	.0051					
28-31	12:10 a. m.	4 10	.56	.84	.40	.28	.13	12:30 a. m.	3:44 p. m. (28)	.0056	.11	.0006			
	3:44 p. m.	1 52	1.00	5.76	2.36	1.26	.54	3:44 p. m.	10:00 p. m. (29)	.1149	13.6	.077	4:52 p. m.		
			0					10:00 p. m. (29)	12:00 p. m. (31)	.0051					
Total			2.15							.1738					
April:															
1-6			.08					12:01 a. m. (1)	10:17 p. m. (6)	.0098					
6-16	10:06 p. m.	4 9	.67	.60	.36	.36	.17	10:17 p. m.	12:00 m. (7)	.0076	.740	.0042			
16-17			0					12:00 m. (7)	12:55 a. m. (15)	.0111					
17-25	11:48 p. m. (14)	12 20	2.25	2.16	.96	.80	.18	12:55 a. m. (15)	12:00 p. m. (16)	.7138	42.3	.24			
25-26			0					12:00 p. m.	3:30 a. m. (17)	.0010					
26-27	3:35 a. m.	55	.12	.24	.16	.14	.13	3:30 a. m.	12:00 p. m.	.0256	.86	.0048			
27-30			0					12:00 p. m. (17)	4:10 a. m. (25)	.0217					
30-31	4:03 a. m.	1 40	.18	.48	.28	.20	.11	4:10 a. m.	12:00 m.	.0020	.072	.0004			
	6:00 a. m.	1 12	.19	.72	.36	.22	.17	12:00 m. (25)	6:04 a. m. (26)	.0027					
			0					6:04 a. m.	2:30 p. m.	.0073	.67	.0038	7:11 a. m.	1 7	
	6:10 a. m.	4 0	.25	.24	.16	.14	.06	2:30 p. m. (26)	6:20 a. m. (27)	.0026					
			0					6:20 a. m.	6:30 p. m.	.0070	.20	.0012			
			0					6:30 p. m. (27)	12:00 p. m. (30)	.0095					
Total			3.74							.8223					

¹ When date is other than that in column 1, date is in parentheses following the time.² Snow.

TABLE 13.—Summary of rainfall and run-off from watershed W1, June 22, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Silt loss
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate	Time of maximum rate ¹	Period of rise		
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
May:			0					12:01 a. m. (1)							
1-4			.26	0.72	0.36	0.22	0.12								
4	12:15 a. m.	2 13	0												
4-7			.36	.24	.20	.20	.06								
7	10:30 a. m.	5 30	.14												
7-13			.69	2.64	1.40	.84	.25	12:10 a. m.	12:10 a. m. (13)	0.0190					
13	12:15 a. m.	2 45	.10					1:00 p. m. (13)	12:30 a. m. (23)	.0069	0.38	0.002			
13-23			.86	3.12	1.72	1.02	.41	12:30 a. m.	12:00 m.	.0158					
23	12:30 a. m.	2 7	0					12:00 m. (23)	12:00 p. m. (31)	.0110	1.87	.010			
23-31			2.41							.0120					
Total										.0647					
June:			0					12:01 a. m. (1)	3:22 a. m. (4)	.0033					
1-4			.91	1.80	1.12	.68	.24	3:22 a. m.	12:00 m.	.0012	.066	.0004			
4	3:16 a. m.	3 44	0					12:00 m. (4)							
4-8			.34	.72	.44	.36	.21								
8	1:05 p. m.	1 35	.36	.24	.24	.24	.80								
9	2:05 a. m.	3 55	.34												
9-17			.42	1.44	.80	.54	.13	6:00 a. m.	6:00 a. m. (17)	.0136					
17	6:00 a. m.	3 10	0					12:00 p. m. (17)	12:38 p. m. (21)	.0014	.075	.0004			
17-21			.90	3.96	3.00	1.92	.61	12:38 p. m.	11:00 p. m.	.0021					
21	12:32 p. m.	1 28	0					11:00 p. m. (21)	12:00 p. m. (30)	.0285	9.60	.054	12:59 p. m.	21	
21-30			3.27							.0089					
Total										.0590					
July:			0					12:01 a. m. (1)	4:55 p. m. (9)	.0063					
1-9			.87	2.40	1.84	1.28	1.21	4:55 p. m.	12:00 p. m.	.0007	.11	.0006			
9	4:57 p. m.	43	0					12:00 p. m. (9)	7:15 a. m. (19)	.0063					
9-19			.56	.60	.40	.34	.08	7:15 a. m.	12:00 p. m.	.0011	.024	.0001			
19	4:25 a. m.	7 8	0					12:00 p. m. (19)	9:18 a. m. (20)	T					
19-20			.18	1.08	.72	.36	.05	9:18 a. m.	12:00 p. m.	.0011	.055	.0003	9:25 a. m.	7	
20	9:16 a. m.	3 24	.07					12:00 p. m. (20)	8:00 a. m. (22)	.0014					
20-22			.35	.24	.24	.22	.05	8:00 a. m.	12:00 p. m.	.0012	.027	.0001	9:15 a. m.	1 15	
22	3:30 a. m.	6 50	.30					12:00 p. m. (22)	12:00 p. m. (31)	.0074					
22-31			2.33							.0255					
Total															
August:			.11					12:01 p. m. (1)	2:53 p. m. (10)	.0035					
1-10			.86	2.16	1.52	1.28	.94	2:53 p. m.	12:00 p. m. (11)	.0008	.11	.0006			
10	2:52 p. m.	55	T					12:00 p. m. (11)	12:00 p. m. (31)	.0062					
11-31			.97							.0105					
Total															
September:			.06					12:01 a. m. (1)	9:10 a. m. (11)	.0055					
1-11			.75	1.80	1.72	1.12	.53	9:10 a. m.	12:00 p. m.	.0011	.11	.0006			
11	9:10 a. m.	1 25	0					12:00 p. m. (11)	12:00 m. (25)	.0026					
11-25			.04					12:00 p. m. (25)	12:00 p. m. (30)	0					
25-30			.85							.0092					
Total															
October:			.17							0					
1-31			.75							0					
Total															
November:															
1-30															
December:			.22												
1-22			1.78	1.68	1.28	.90	.39								
22	1:00 p. m.	5 39	.20												
22-25			.32	.36	.12	.10	.04								
25	10:00 a. m.	8 55	.22							0					
25-31			2.74							0					
Total															
1939															
January:			.05					12:01 a. m. (1)	5:25 p. m. (8)	0					
1-8			1.02	2.04	1.32	1.08	.17	5:25 p. m.	9:00 p. m. (9)	T	.0044		6:25 p. m.	1 0	
8	4:30 p. m.	6 6	.08					9:00 p. m. (9)	8:10 a. m. (11)	0					
9-11			2.20	1.32	.64	.42	.13	8:10 a. m. (11)	12:00 p. m. (13)	.0448	1.70	.0096			
11-13	8:10 a. m. (11)	16 28	.21					12:00 p. m. (13)	4:30 a. m. (23)	.0004					
13-23			.27	.36	.20	.12	.05	4:30 a. m.	2:00 a. m. (24)	.0007	.018	.0001			
23	4:30 a. m.	5 30	.03					2:00 a. m. (24)	12:00 p. m. (31)	.0031					
24-31			3.86							.0490					
Total															
February:			.10					12:01 a. m. (1)	7:35 p. m. (9)	.0043					
1-9			.22	2.16	.88	.44	1.32	7:35 p. m.	6:00 a. m. (10)	.0005	.028	.0002	8:00 p. m.	25	
9	7:35 p. m.	10	0					6:00 a. m. (10)	8:30 a. m. (14)	.0018					
10-14			.15	.84	.44	.26	.21	8:30 a. m.	1:00 p. m.	.0002	.019	.0001	9:10 a. m.	2 40	
14	8:23 a. m.	42	0					1:00 p. m. (14)	10:30 a. m. (17)	.0013					
14-17			.46	1.92	1.24	.70	.09	10:30 a. m.							
17	10:30 a. m.	5 10	.77	.72	.40	.30	.10		12:00 p. m. (19)	.0165	.88	.0050		0.0010	
18	11:00 p. m.	6 48	.07					12:00 p. m. (19)	5:30 a. m. (25)	.0041					
19-25			1.09	1.44	1.20	.96	.21	5:30 a. m.	12:00 p. m. (26)	.0826	4.05	.023		.0147	
25	5:24 a. m.	5 6	.06					12:00 p. m. (26)	12:00 p. m. (28)	.0022					
26-28			2.92							.1135					
Total															

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 13.—Summary of rainfall and run-off from watershed W1, June 22, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Period of rise	Silt loss
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate	Time of maximum rate ¹				
				Maximum for—			Began ¹	Ended ¹	Amount							
				5-minute period	15-minute period	30-minute period				Average rate for duration of rain						
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Ton per acre		
March:			0.18					12:01 a. m. (1)	8:05 a. m. (25)	0.0221						
1-25	8:15 a. m.	3 46	1.12	2.40	1.52	1.24	0.30	6:05 a. m.	12:00 p. m.	.0054	0.45	0.0025		.0006		
25-31			.09					12:00 p. m. (25)	12:00 p. m. (31)	.0071						
Total			1.39							.0346						
April:			0					12:01 a. m. (1)	2:25 a. m. (5)	.0041						
1-5			.31	.84	.60	.36	.30	2:25 a. m.	6:00 p. m.	.0009	.024	.0001	3:30 a. m.	1 5		
5-16	2:24 a. m.	1 1	.03					6:00 p. m. (5)	4:45 a. m. (16)	.0077						
16	4:42 a. m.	1 15	.25	.72	.40	.30	.17	4:45 a. m.	12:00 p. m.	.0009	.019	.0001	5:45 a. m.	1 0		
16-26			.10					12:00 p. m. (16)	6:00 a. m. (26)	.0047						
26	6:02 a. m.	1 28	.30	2.16	1.16	.64	.20	6:00 a. m.	6:00 p. m.	.0005	.030	.0002	6:50 a. m.	50		
26-30			.06					6:00 p. m. (26)	12:00 p. m. (30)	.0019						
Total			1.05							.0207						
May:			0					12:01 a. m. (1)	4:45 p. m. (7)	.0030						
1-7			.63	1.32	1.00	.70	.28	4:45 p. m.	12:00 p. m. (8)	.0011	.027	.0002				
7	4:32 p. m.	2 9	.08					12:00 p. m. (8)	5:00 a. m. (16)	.0013						
8-16			1.28	2.52	1.64	1.14	.30	5:00 a. m.	12:00 p. m.	.0010	.058	.0003	7:45 a. m.	2 45		
16	4:55 a. m.	4 20	0					12:00 p. m.								
16			1.00	2.88	2.28	1.56	.42	6:25 a. m.	6:30 p. m.	.1154	20.3	.11	7:24 a. m.	59		
17	6:22 a. m.	2 24	.43	.72	.56	.46	.20	6:30 p. m.	6:46 a. m. (18)	.0797	12.8	.072	8:43 p. m.	53		
17	6:30 p. m.	2 10	.46	3.84	1.96	1.00	.47	6:46 a. m.	12:00 p. m.	.1604	48.0	.27	7:25 p. m.	37		
18	6:46 a. m.	59	.05					12:00 p. m. (18)	12:45 a. m. (20)	.0012						
18-20			.93	1.56	1.36	1.14	.46	12:45 a. m.	5:00 p. m.	.3413	67.5	.38	1:48 a. m.	3		
20	12:35 a. m.	2 0	.02					5:00 p. m. (20)	12:00 p. m. (31)	.0108				.261		
20-31			4.28							.7152						
Total																
June:			.23					12:01 a. m. (1)	4:40 a. m. (4)	.0025						
1-4			.86	2.04	1.24	.80	.24	4:40 a. m.	12:00 p. m.	.0018	.048	.0003				
4-19	4:30 a. m.	3 35	.14					12:00 p. m. (4)	4:35 a. m. (19)	.016						
19	4:30 a. m.	3 39	1.28	3.00	2.28	1.56	.35	4:35 a. m.	12:00 p. m.	.0025	.21	.0012	10:04 a. m.	5 29		
19-30			.17					12:00 p. m. (19)	12:00 p. m. (30)	.0077						
Total			2.68							.0305						
July:			0					12:01 a. m. (1)	12:00 p. m. (25)	.0085						
1-25			.30					12:00 p. m. (25)	12:00 p. m. (31)	0						
25-31			.30							.0085						
Total																
August:			.75													
1-19			.62	2.52	1.48	1.00	.52									
19	6:13 p. m.	1 12	.68	1.80	1.16	.88	.30									
20	2:44 p. m.	3 16	.20							0						
21-31			2.25							0						
Total																
September:			.30							0						
1-30																
October:			0													
1-8			.35	1.44	.96	.66	.78									
8	1:13 p. m.	27	.07													
9			.38	.96	.40	.32	.26									
9	8:27 p. m.	1 29	.70	2.28	1.44	.80	.19									
10	12:30 a. m.	3 45	.07													
10-27			.26	1.20	.88	.52	.52									
27	12:40 p. m.	30	0							0						
27-31			1.83							0						
Total																
November:			.24													
1-11			.27	.36	.28	.20	.08									
11	3:30 a. m.	3 30	.02													
11			.66	.36	.36	.36	.14									
11-29	10:30 a. m.	4 45	.64													
29	9:00 p. m.	9 50	.38	.60	.24	.18	.04									
30			.18							0						
Total			2.39							0						
December:			0													
1-22			.66	1.56	.96	.58	.11									
22	4:30 a. m.	5 45	.45							0						
22-31			1.11							0						
Total																

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 14.—Summary of rainfall and run-off from watershed W2, June 23, 1937, to December 31, 1939

LOCATION: Latitude 31°27'19", longitude 96°52'55".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 3,100 feet. Area, 130 acres.

Shape factor.—0.591.

Slope.—5 percent of the watershed has a slope of less than 1 percent; 74 percent, 1 to 3 percent; 21 percent, 3 to 6 percent. Average slope is 2.45 percent.

Soil.—Predominating soil is Houston black clay. The depth to slightly weathered substrata as a rule is 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Along the main channel of the two branches of this stream is some gully erosion and several field gullies enter the main channel. There is little evidence of serious sheet erosion.

Special features.—Gravel highways and one farmstead occupy about 7 percent of the area. There were originally three stock ponds in the principal drainageways. In June and July 1938 one of these, having capacity of about 12,000 cubic feet, was removed and one was reduced in capacity from about 45,000 cubic feet to about 8,000 cubic feet. In December 1938 the third, having capacity of about 20,000 cubic feet, was removed. About 3 acres is privately owned and the drainage from part of this area may be artificially diverted during certain seasons by cultivation as the topography is sufficiently flat to be affected by deep furrowing.

LAND USE:

Plan.—Prevailing practices with rotation (corn, cotton, oats, cotton) on some fields.

Vegetal cover and soil condition.—See figures 6 and 7 and tables 9 and 10.

MEASUREMENTS:

Precipitation.—Precipitation was measured at 5 recording rain

gages, at stations W-4, W-4a, W-5, W-6, W-7, (fig. 2). The maximum and average rainfall intensities were obtained from station W-4. No nonrecording rain gages were used after May 1, 1938. Before that time the only recording gage was at station W-4; those at stations W-5, W-6, and W-7 were nonrecording. After May 1, 1938, the amount of rainfall was obtained by the Thiessen average of the amounts collected in the recording gages. Before that date it was obtained from station W-4. Snowfall was measured by weighing-recording rain gages.

Run-off.—Run-off was measured by a 15-foot flume-weir with FW-1 water-stage recorders. The records of run-off are excellent below 20 second-feet and good above when all conditions were favorable. The presence of silt on the flume floor, intake stoppage on receding stages, shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of the records.

Soil loss.—Records of soil loss were obtained by manual sampling of the run-off waters.

Ground-water levels.—2 recording and 9 nonrecording wells (fig. 4) were used to indicate the fluctuation of the ground water beneath this watershed.

Changes during year.—A small trench was cut in the floor of the flume to concentrate and prevent wind action on the low flows.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1938, 25.94 inches; 1939, 25.07 inches. Maximum 5 minutes, 5.76 inches per hour, March 28, 1938. Maximum 15 minutes, 3.64 inches per hour, June 5 and September 6, 1937. Maximum 30 minutes, 3.32 inches per hour, September 6, 1937.

Run-off.—Annual run-off amount 1938, 3.02 inches; 1939, 0.76 inch. Maximum rate of run-off, 0.24 inch per hour (31.7 second-feet), May 20, 1939. No flow for long periods.

Date	Rainfall							Run-off							
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period					Sec.-ft.	In. per hr.			
June: 1937	Hr.	min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.	In.	Sec.-ft.	In. per hr.	Hr.	min.	Tons per acre		
1 to 4			0.42												
4	6:10 a. m.	4 0	.65	0.72	0.60	0.44	0.16								
4			.03												
5	12:47 a. m.	23	.38	2.04	1.40	.76	.99								
5	6:32 a. m.	1 3	1.52	4.92	3.64	2.66	1.45								
5 to 7			0												
7	6:22 a. m.	38	.45	1.56	.96	.84	.71								
7 to 16			0												
16	6:45 a. m.	49	.34	1.08	.64	.48	.42								
16 to 19			0												
19	6:33 p. m.	27	.28				.62								
19 to 30			0					12:00 m. (23)	12:00 p. m. (30)	0.0069					
Total			4.07							0.0069					
July:															
1 to 8			0					12:01 a. m. (1)	10:05 p. m. (8)	.0014					
8 to 9			0					10:05 p. m. (8)	10:05 a. m. (9)	0					
9	10:05 a. m.	2 2	.28	.36	.20	.18	.14	10:05 a. m.	6:15 p. m.	.0001	0.015	0.0001	10:12 a. m.	7	
9	6:15 p. m.	9 41	.84	1.20	.72	.46	.08	6:15 p. m.	12:00 p. m. (10)	.0073	.096	.0007	6:30 p. m.	15	
10 to 24			.10					12:00 p. m. (10)	4:00 p. m. (24)	.0078					
24 to 31			0					4:00 p. m. (24)	12:00 p. m. (31)	0					
Total			1.22							.0166					

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 14.—Summary of rainfall and run-off from watershed W2, June 23, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Silt loss
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period					In. per hr.	In. per hr.			
1937				In.	In.	In.	In.								
August: 1 to 31		Hr. min.	In. 0.75							In. 0					
September: 1 to 2			0					12:01 a. m. (1)							
2	8:50 a. m.	2 20	1.03	1.68	1.48	1.32	0.44		6:45 p. m. (6)	0					
2 to 6			.22						2:50 p. m. (7)	0.040	9.90	0.0752	7:30 p. m.	45	
6	6:28 p. m.	3 17	2.70	3.96	3.64	3.32	.82	6:45 p. m.	12:00 p. m.	.0011	.104	.0008	3:40 p. m.	50	
7	2:10 p. m.	1 4	.20	.48	.32	.24	.19		12:00 p. m. (7)	.0004					
7 to 9			0						3:00 p. m. (9)	0					
9 to 11			0						12:30 p. m. (11)	0					
11	12:28 p. m.	38	.28	1.68	.88	.44	.44	12:30 p. m.	11:00 a. m. (12)	.0004	.0111	.0001			
12 to 30			0					11:00 a. m. (12)	12:00 p. m. (30)	0					
Total			4.43							.0419					
October: 1 to 9			0					12:01 a. m. (1)	7:25 a. m. (9)	0					
9	7:25 a. m.	3 5	.36	.72	.60	.46	.12	7:25 a. m.	11:40 a. m.	T	.0044		7:37 a. m.	12	
9 to 13			0					11:40 a. m. (9)	6:10 a. m. (13)	0					
13	6:20 a. m.	8 3	1.61	1.20	.84	.74	.20	6:10 a. m.	4:00 p. m. (14)	.0007	.024				
14			0					4:00 p. m.	4:20 p. m. (15)	.0002					
15			0					4:20 p. m.	9:40 p. m. (16)	0					
16	12:41 p. m.	1 16	.29	.48	.36	.26	.23	9:40 p. m.	2:45 a. m. (17)	.0001	.0060		2:00 a. m. (17)	4 20	
17	1:30 a. m.	6 10	.59	1.08	.60	.32	.10	2:45 a. m.	12:00 p. m.	.0032	.066	.0005	10:00 a. m.	7 15	
17 to 19			0					12:00 p. m. (17)	3:15 a. m. (19)	.0003					
19 to 31			0					3:15 a. m. (19)	12:00 p. m. (31)	0					
Total			2.85							.0045					
November: 1 to 9			.30					12:01 a. m. (1)	12:19 a. m. (9)	0					
9	12:20 a. m.	8 19	2.83	3.12	2.60	1.82	.34	12:19 a. m.	12:00 p. m.	.0916	3.16	.0240			
9 to 22			0					12:00 p. m. (9)	11:00 a. m. (22)	.0069					
22 to 25	8:50 a. m. (22)	10 55	2.42	.24	.20	.16	.04	11:00 a. m. (22)	12:00 p. m. (25)	.0182	.092	.0007	8:00 p. m. (22)	9 0	
25 to 30			0					12:00 p. m. (25)	12:00 p. m. (30)	.0043					
Total			3.55							.1210					
December: 1 to 13			0					12:01 a. m. (1)	8:00 a. m. (13)	.0097					
13 to 16	7:30 p. m.	8 25	.61	.24	.20	.16	.07	8:00 p. m. (13)	3:00 a. m. (16)	.0079	.075	.0006			
16	1:30 a. m.	14 53	1.08	.48	.38	.28	.07	3:00 a. m.	5:00 p. m. (17)	.0650	.98	.0075	4:30 p. m.		
17 to 22			.09					5:00 p. m. (17)	2:25 a. m. (22)	.0110					
22	1:20 a. m.	12 10	1.40	.60	.40	.34	.13	2:25 a. m.	12:00 p. m. (23)	.2032	4.13	.0314			
23 to 28			.04					12:00 p. m. (23)	5:00 a. m. (28)	.0465					
28	3:20 a. m.	3 49	.45	.36	.32	.22	.12	5:00 a. m.	10:00 a. m. (29)	.0540	1.01	.0077			
29 to 31			0					10:00 a. m. (29)	12:00 p. m. (31)	.0380					
Total			3.63							.4353					
1938															
January: 1-5			0					12:01 a. m. (1)	5:15 p. m. (5)	.031					
5-7	2:30 p. m. (5)	11 10	.64	.12	.12	.10	.06	5:15 p. m. (5)	12:00 m. (7)	.066	.62	.0047	2:10 a. m. (6)	8 55	
7-21			.68					12:00 p. m. (7)	5:25 p. m. (21)	.083					
21	3:50 p. m.	4 0	.24	.48	.24	.18	.04	5:25 p. m.	6:00 a. m. (22)	.014	4.14	.0032	7:20 p. m.	1 5	
23			0					6:00 a. m. (22)	1:55 a. m.	.012					
23	12:20 a. m.	12 38	2.52	1.68	.92	.60	.21	1:55 a. m.	12:00 p. m. (24)	.802	28.0	.21	3:11 a. m.	1 16	
24-31			.03					12:00 p. m. (24)	12:00 p. m. (31)	.045					
Total			4.11							1.053					
February: 1-16			.12					12:01 a. m. (1)	9:30 a. m. (16)	.026					
16			0					9:30 a. m.	1:27 p. m.	0					
16	12:05 p. m.	3 48	1.56	3.12	2.32	1.50	.32	1:27 p. m.	4:00 p. m. (17)	.284	30.3	.23	2:29 p. m.	1 2	
17			0					4:00 p. m.	10:48 p. m.	T					
17-19	10:40 p. m. (17)	2 30	.47	.48	.44	.30	.19	10:48 p. m. (17)	12:00 p. m. (19)	.220	10.4	.079	3:13 a. m. (18)	2 21	
19-21			0					12:00 p. m. (19)	6:55 a. m. (21)	.018					
21	6:50 a. m.	5 35	.68	.72	.44	.34	.12	6:55 a. m.	2:00 p. m. (22)	.238	7.32	.056			
22-28			0					2:00 p. m. (22)	12:00 p. m. (28)	.024					
Total			2.83							.810					
March: 1-22			.23					12:01 a. m. (1)	12:27 p. m. (22)	.058					
22	12:25 p. m.	40	.36	1.80	.80	.60	.54	12:27 p. m.	12:00 p. m.	.007	.14	.0011	1:45 p. m.	1 18	
22-27			0					12:00 p. m. (22)	12:10 a. m. (27)	.024					
27	12:10 a. m.	4 10	.56	.84	.40	.28	.13	12:10 a. m.	3:44 p. m. (28)	.025	.18	.0014			
28	3:44 p. m.	1 52	1.00	5.76	2.40	1.28	.54	3:44 p. m.	12:00 m. (29)	.065	6.26	.048	4:32 p. m.	1 2	
29-31			.01					12:00 m. (29)	12:00 p. m. (31)	.028					
Total			2.16							.207					

¹ When date is other than that in column 1, date is in parentheses following the time.² Snow.

TABLE 14.—Summary of rainfall and run-off from watershed W2, June 23, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off						
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate	Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period				Average rate for duration of rain				
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre
April:														
1-6			0.08					12:01 a. m. (1)	10:15 p. m. (6)	0.0430				
6	10:06 p. m.	4 9	.67	0.60	0.36	0.36	0.17	10:15 p. m.	12:00 m. (7)	.0120	2.74	0.0020		
7-15			0					12:00 m. (7)	12:55 a. m. (15)	.0502				
15	11:48 p. m. (14)	12 20	2.25	2.16	.96	.80	.18	12:55 a. m.	12:00 p. m. (16)	.5304	17.0	.13		
16-25			.12					12:00 p. m. (16)	4:05 a. m. (25)	.0457				
25	4:03 a. m.	1 40	.18	.48	.28	.20	.11	4:05 a. m.	2:00 p. m.	.0016	.038	.0003		
25-26			0					2:00 p. m. (25)	6:00 a. m. (26)	.0016				
26	6:00 a. m.	1 12	.19	.72	.36	.22	.12	6:00 a. m.	6:00 p. m.	.0044	.096	.0007		
27			0					6:00 p. m. (26)	6:25 a. m.	.0012				
27	6:10 a. m.	4 0	.25	.24	.16	.14	.06	6:25 a. m.	6:30 p. m.	.0029	.055	.0004		
27-30			0					6:30 p. m. (27)	12:00 p. m. (30)	.0115				
Total			3.74							.7045				
May:														
1-4			0					12:01 a. m. (1)	2:15 a. m. (4)	.0120				
4	12:15 a. m.	2 54	.30	1.08	.44	.26	.10	2:15 a. m.	6:00 p. m.	.0022	.038	.0003	3:45 a. m.	1 30
4-7			0					6:00 p. m. (4)						
7	10:30 a. m.	5 0	.37	.24	.20	.20	.07							
7-12			.14											
12			0					11:30 a. m.	12:15 a. m. (13)	.0578				
13	12:15 a. m.	4 45	.59	1.68	.92	.58	.12	12:15 a. m.	12:00 p. m.	.0009	.040	.0003	12:30 a. m.	15
13-23			.08					12:00 p. m. (13)	12:05 p. m. (23)	.0100				
22	11:05 p. m.	4 55	.90	3.36	2.08	1.10	.18	12:05 a. m. (23)	2:00 p. m. (23)	.0084	.65	.0049		
23-31			0					2:00 p. m. (23)	12:00 p. m. (31)	.0085				
Total			2.38							.0998				
June:														
1-4			0					12:01 a. m. (1)	3:15 a. m. (4)	.0015				
4	3:18 a. m.	3 27	.98	1.44	1.16	.82	.28	3:15 a. m.	4:00 p. m.	.0051	.12	.0009		
4-8			0					4:00 p. m. (4)	1:50 p. m. (8)	.0028				
8	1:05 p. m.	1 35	.29	.60	.36	.32	.18	1:50 p. m.						
9	2:05 a. m.	3 25	.37	.24	.24	.24	.11		1:00 p. m.	.0050	.078	.0006		
9-17			.13					1:00 p. m. (9)	3:00 a. m. (17)	.0324				
16	11:38 p. m.	3 47	.56	1.56	.96	.62	.15	3:00 a. m. (17)	4:00 p. m. (17)	.0060	.14	.0010		
17-21			0					4:00 p. m. (17)	12:39 p. m. (21)	.0162				
21	12:35 p. m.	35	.94	4.20	3.00	1.88	1.61	12:39 p. m.	11:00 p. m.	.0152	1.87	.014	1:30 p. m.	51
21-30			0					11:00 p. m. (21)	12:00 p. m. (30)	.0450				
Total			3.27							.1292				
July:														
1-9			0					12:01 a. m. (1)	4:57 p. m. (9)	.0010				
9	4:57 p. m.	43	.60	1.68	1.44	1.06	.84	4:57 p. m.	12:00 p. m.	.0014	.13	.0010		
9-11			0					12:00 p. m. (9)	4:00 p. m. (11)	.0009				
11-14			0					4:00 p. m. (11)	7:00 a. m. (14)	0				
15			0					7:00 a. m. (14)	12:00 p. m.	.0002				
15-19			.04					12:00 p. m. (15)	7:10 a. m. (19)	0				
19	6:30 a. m.	4 17	.54	1.44	.88	.52	.14	7:10 a. m.	10:00 p. m.	.0012	.043	.0003	9:15 a. m.	2 5
19-20			0					10:00 p. m. (19)	9:17 a. m. (20)	.0002				
20	9:16 a. m.	34	.28	2.16	1.08	.54	.49	9:17 a. m.	2:00 p. m.	.0008	.058	.0004	9:25 a. m.	8
20-22			.07					2:00 p. m. (20)	8:00 a. m. (22)	.0023				
22	3:30 a. m.	7 7	.35	.24	.24	.22	.08	8:00 a. m.	4:00 p. m.	.0014	.034	.0002	11:30 a. m.	3 30
22-31			.29					4:00 p. m. (22)	12:00 p. m. (31)	.0085				
Total			2.17							.0179				
August:														
1-10			.09					12:01 a. m. (1)	2:54 p. m. (10)	0				
10	2:52 p. m.	39	.77	1.92	1.40	1.00	1.19	2:54 p. m.	8:00 p. m. (11)	.0006	.028	.0002		
11-31			0					8:00 p. m. (11)	12:00 p. m. (31)	0				
Total			.86							.0006				
September:														
1-11			.06											
11	9:10 a. m.	1 40	.74	2.64	1.84	1.10	.44							
11-30			.03							0				
Total			.83							0				
October:														
1-31			.22							0				
November:														
1-30			.68							0				
December:														
1-22			.14					12:01 a. m. (1)						
22	10:24 a. m.	4 49	1.15	1.68	1.20	.86	.24							
22	7:00 p. m.	3 55	.60	1.56	.92	.64	.15							
22-25			.16							0				
25	6:30 a. m.	14 57	.64	.62	.08	.06		6:30 a. m.	6:30 a. m. (25)	0				
26-31			0					9:00 a. m.	9:00 a. m. (26)	.0002	.0076			
Total			2.69					9:00 a. m. (26)	12:00 p. m. (31)	0				

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 14.—Summary of rainfall and run-off from watershed W2, June 23, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							Silt loss
	Time began ¹	Duration	Total amount	Intensity			Average rate for duration of rain	Accumulation			Maximum rate		Time of maximum rate	Period of rise	
				Maximum for—				Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
January:															
1-8			0.06					12:01 a. m. (1)	5:30 p. m. (8)	0					
8	5:10 p. m.	8 50	.98	1.56	1.28	1.04	0.11	5:30 p. m.			0.0039		5:39 p. m.	9	
9			.09						7:00 p. m.	0.0006					
9-11			0					7:00 p. m. (9)	8:20 a. m. (11)	T					
11-13	8:10 a. m. (11)	11 27	2.07	1.20	.52	.34	.17	8:20 a. m. (11)	12:00 p. m. (13)	.0283	.53	0.0040			
13-23			.27					12:00 p. m. (13)	4:27 a. m. (23)	.0018					
23	4:27 a. m.	2 38	.27	.24	.16	.10	.10	4:27 a. m.	12:00 p. m.	.0017	.020	.0002			
23-31			.04					12:00 p. m. (23)	12:00 p. m. (31)	.0048					
Total			3.78							.0372					
February:															
1 to 7			0					12:01 a. m. (1)	12:35 p. m. (7)	0.0011					
7 to 9			.10					12:35 p. m. (7)	7:35 p. m. (9)	0					
9	7:36 p. m.	10	.24	2.16	.88		1.44	7:35 p. m.	4:30 p. m. (10)	.0006	.013	.0001	8:00 p. m.	25	
10 to 14			0					4:30 p. m. (10)	1:30 a. m. (14)	0					
14 to 17			.15					1:30 a. m. (14)	10:40 a. m. (17)	T					
17	10:34 a. m.	3 58	.46	1.92	1.20	.64	.12	10:40 a. m.							
18	11:14 p. m.	6 23	.77	.60	.44	.30	.12		12:00 p. m. (19)	.0228	1.18	.0090			
19 to 25			.08					12:00 p. m. (19)	5:25 a. m. (25)	.0046					
25	5:26 a. m.	5 34	1.02	1.56	1.00	.84	.18	5:25 a. m.	12:00 p. m.	.0739	2.34	.018			
26 to 28			.07					12:00 p. m. (25)	12:00 p. m. (28)	.0106					
Total			2.89							.1136					
March:															
1 to 25			.15					12:01 a. m. (1)	8:15 a. m. (25)	.0470					
25	8:18 a. m.	5 19	1.10	2.16	1.68	1.36	.21	8:15 a. m.	12:00 p. m.	.0130	.42	.0032			
25 to 31			.10	1.44	1.00	.64		12:00 p. m. (25)	12:00 p. m. (31)	.0093					
Total			1.35							.0693					
April:															
1 to 5			0					12:01 a. m. (1)	2:26 a. m. (5)	.0039					
5	2:24 a. m.	2 24	.34	.84	.36	.20	.10	2:26 a. m.	12:00 p. m.	.0030	.058	.0004			
5 to 12			0					12:00 p. m. (5)	12:00 p. m. (12)	.0031					
12			0					12:00 p. m.	8:00 a. m. (13)	0					
13			0					8:00 a. m.	9:00 p. m. (14)	.0003					
14			0					9:00 p. m.	3:30 a. m. (15)	0					
15 to 16			.03					3:30 a. m. (15)	4:40 a. m. (16)	.0003					
16	4:40 a. m.	1 10	.26	.84	.52	.34	.22	4:40 a. m.	12:00 p. m.	.0018	.036	.0002	6:00 a. m.	1 20	
17			0					12:00 p. m. (16)	4:15 p. m.	.0002					
17 to 26			.09					4:15 p. m. (17)	6:03 p. m. (26)	0					
26	6:00 a. m.	1 22	.37	1.44	1.00	.64	.27	6:03 a. m.	3:00 p. m.	.0001	.032	.0002			
26 to 30			.09					3:00 p. m. (26)	12:00 p. m. (30)	0					
Total			1.18							.0127					
May:															
1 to 7			0					12:01 a. m. (1)	4:42 p. m. (7)	0					
7	4:42 p. m.	57	.20	.72	.52	.44	.21	4:42 p. m.	6:40 p. m.	T	.0019		5:15 p. m.	33	
7			0					6:40 p. m.	10:00 p. m.	0					
7	10:02 p. m.	2 0	.40	1.44	.92	.78	.20	10:00 p. m.	12:00 m. (8)	T	.022		10:25 p. m.	25	
8 to 16			.09					12:00 m. (8)							
16	4:55 a. m.	3 20	1.18	2.88	1.96	1.24	.35								
16			.13						6:24 a. m.	0					
17	6:23 a. m.	5 58	.94	3.24	2.00	1.46	.16	6:24 a. m.	6:55 p. m.	.0695	6.96	.053	6:58 a. m.	34	
17	6:45 p. m.	1 55	.44	.60	.52	.42	.23	6:55 p. m.	6:48 a. m. (18)	.0414	2.97	.023			
18	6:48 a. m.	1 2	.41	2.40	1.44	.78	.40	6:48 a. m.	12:00 p. m.	.0962	20.0	.15	7:06 a. m.	18	
18 to 20			.05					12:00 p. m. (18)	12:40 a. m. (20)	.0027					
20	12:38 a. m.	1 32	1.01				.66	12:40 a. m.	5:00 p. m.	.2642	31.7	.24	2:00 a. m.	1 20	
20 to 31			.05					5:00 p. m. (20)	12:00 p. m. (31)	.0243					
Total			4.90							.4983					
June:															
1 to 4			.14					12:01 a. m. (1)	4:00 a. m. (4)	.0064					
4	4:40 a. m.	3 18	.70	1.68	1.04	.72	.21	4:00 a. m.	12:00 p. m.	.0084	.20	.0015			
4 to 14			0					12:00 p. m. (4)	2:00 p. m. (14)	.012					
14 to 19			.25					2:00 p. m. (14)	4:50 a. m. (19)	0					
19	4:35 a. m.	4 31	1.27	2.64	2.16	1.40	.28	4:50 a. m.	11:00 p. m.	.0023	.078	.0006			
19 to 30			.18					11:00 p. m. (19)	9:00 a. m. (30)	.0031					
30			0					9:00 a. m.	12:00 p. m.	0					
Total			2.54							.0322					
July:															
1 to 31			.29							0					
August:															
1 to 16			.44												
16	12:02 p. m.	28	.35	2.04	1.16	.62	.75								
16 to 19			.13												
19	6:16 p. m.	1 6	.52	1.44	1.04	.68	.47								
20	2:44 p. m.	2 36	.66	1.44	1.12	.88	.25								
20 to 31			.29							0					
Total			2.39							0					

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 14.—Summary of rainfall and run-off from watershed W2, June 23, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off							
	Time began ¹	Duration	Total amount	Intensity				Accumulation			Maximum rate		Time of maximum rate ¹	Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain	Began ¹	Ended ¹	Amount					
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In. 0.24	In. per hr.	In. per hr.	In. per hr.	In. per hr.			In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre	
1939										0					
September: 1 to 30															
October: 1 to 8			0												
9	1:15 p. m	25	0.34	1.32	1.00	0.68	0.82								
9			.07												
9	8:28 p. m	1 29	.37	.60	.44	.36	.25								
10	12:30 a. m	2 58	.77	2.16	1.36	.72	.26								
10 to 27			.07												
27	12:41 p. m	24	.29	2.28	1.20	.64	.73								
27 to 31			0							0					
Total			1.91							0					
November: 1 to 11			.24												
11	3:30 a. m	4 0	.29	.36	.28	.18	.07								
11			.01												
11	10:30 a. m	4 28	.64	.48	.40	.36	.14								
11 to 29			.52												
29	2:30 p. m	14 0	.47	.48	.32	.18	.03								
30			.24							0					
Total			2.41							0					
December: 1 to 22			0												
22	4:30 a. m	7 4	.96	1.80	.96	.60	.14								
22 to 31			.23							0					
Total			1.19							0					

¹ When date is other than that in column 1, date is in parentheses following the time.

TABLE 15.—Summary of rainfall and run-off from watershed 2, April 1, 1938, to December 31, 1939

LOCATION: Latitude 31°27'21", longitude 96°53'13".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 400 feet. Area, 2.70 acres.

Shape factor.—0.734.

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 1.91 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined, and there is no evidence of serious erosion. There are several small and rather inactive seepy areas near the lower part of the watershed.

Special features.—The watershed is artificially diked on three sides and has concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in corn during 1938, cotton during 1939. Both were planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station W-4a (fig. 2). Before April 2, 1938, it was measured at gage W-4. No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage W-4a.

Run-off.—Run-off was measured by an H flume with flat floor and 3-foot depth and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1- and 0.2-foot stage (0.035 and 0.12 second-foot), and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 p. m. and May 18, 1939), intake stoppage especially on receding stages (April 15, 1938, May 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Recording well 677 and nonrecording well 676 (fig. 4) were issued to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious collection gutters were covered December 6, 1939, and one-half foot of freeboard was added to the blades and side walls of the H flume on January 30, 1939, increasing the capacity from 30 to 45 second-feet.

TABLE 15.—Summary of rainfall and run-off from watershed 2, April 1, 1938, to December 31, 1939—Continued

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 24.63 inches. Maximum 5 minutes, 4.20 inches per hour, June 21, 1938. Maximum 15 minutes, 3.00 inches per hour, June 21, 1938.

Maximum 30 minutes, 1.88 inches per hour, June 21, 1938. Run-off.—Annual run-off amount 1939, 0.57 inch. Maximum rate of run-off, 0.485 inch per hour (1.32 second-feet), May 20, 1939. No flow for long periods.

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec. ft.	In. per hr.		Hr. min.	Tons per acre	
April:															
1-7			0.19						0						
7	4:20 a. m.	3 30	.54	0.60	0.36	0.36	0.15		0						
7-14			0						0						
14-15	11:50 p. m.	2 0	.42	1.32	.80	.52	.21		0						
15			.14						0						
15	6:00 a. m.	7 20	1.51	2.16	1.32	.94	.21	9:43 a. m.	.33	0.422	0.155			0.0995	
15-27			.58						0						
27	6:10 a. m.	2 58	.27	.24	.16	.12	.09		0						
27-30			0						0						
Total			2.92						.33						
May:															
1-4			0						0						
4	12:50 a. m.	1 23	.28	1.08	.40	.20	.20		0						
4-7			0						0						
7	10:35 a. m.	4 20	.38	.24	.20	.18	.09		0						
7-13			.14						0						
13	12:18 a. m.	2 22	.63	2.16	1.00	.66	.27		0						
13-23			.10						0						
23	12:34 a. m.	1 55	.87	3.12	2.24	1.18	.45		0						
23-31			0						0						
Total			2.40						0						
June:															
1-4			0						0						
4	3:22 a. m.	3 8	.99	1.44	1.08	1.00	.32		0						
4-8			0						0						
8	1:15 a. m.	1 20	.28	.84	.60	.32	.21		0						
9	2:13 p. m.	2 7	.40	.30	.28	.24	.19		0						
9-17			.29						0						
17	7:10 a. m.	1 50	.41	1.44	.96	.60	.22		0						
17-21			0						0						
21	12:38 a. m.	32	.94	4.20	3.00	1.88	1.76		0						
21-30			0						0						
Total			3.31						0						
July:															
1-9			0						0						
9	5:08 p. m.	32	.54	1.68	1.44	1.06	1.01		0						
9-19			.06						0						
19	7:08 a. m.	3 22	.54	1.20	.64	.36	.16		0						
19-22			.31						0						
22	3:50 a. m.	6 25	.36	.24	.24	.20	.06		0						
22-31			.38						0						
Total			2.19						0						
August:															
1-10			.14						0						
10	2:52 p. m.	48	.76	2.28	1.08	.84	.95		0						
10-31			0						0						
Total			.90						0						
September:															
1-11			.05						0						
11	9:20 a. m.	1 30	.75	2.16	1.76	1.10	.50		0						
11-30			.04						0						
Total			.84						0						

TABLE 15.—Summary of rainfall and run-off from watershed 2, April 1, 1938, to December 31, 1939—Continued

Date	Rainfall								Run-off						Remarks
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise	Silt loss	
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In. 0. 22	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In. 0	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1938															
October: 1-31															
November: 1-30			.66						0					November 7; same as September 11 except soil 0-2 inches moist, dry below, cracks 1-2 inches wide, 2-3 feet deep.	
December: 1-22			.24						0						
22	1:00 p. m.	5 15	1.07	1.44	1.16	0.88	0.35		0					Same as November 7 except soil 0-3 inches dry, 3-6 inches moist, dry below, cracks 1-2 inches wide, 2-3 feet deep.	
22	7:32 p. m.	1 43	.61	1.32	.80	.60	.36		0						
22-25			.19						0						
25-26	6:40 a. m.	15 55	.60	.24	.12	.08	.04		0						
26-31			0						0					December 25; same as December 22, except soil 0-12 inches moist, cracks partly sealed, dry and cracked below.	
Total			2.71						0						
1939															
January: 1-8			.04						0						
8	5:10 p. m.	2 0	.81	1.56	1.20	1.04	.55		0					Bare land, bedded Jan. 5, beds 8-10 inches; soil 0-24 inches moist, loose.	
8-11			.35						0					Bare land, soil moist, cracks closed; beds 8-10 inches.	
11	12:30 p. m.	6 15	.93	.96	.56	.38	.15		0						
11-12	10:00 p. m.	7 21	.94	.96	.48	.34	.13		0						
12-23			.36						0						
23	4:30 a. m.	6 0	.27	.24	.16	.10	.04		0						
23-31			.04						0						
Total			3.74						0						
February: 1-17			.47						0						
17	11:45 a. m.	1 45	.40	1.68	1.20	.64	.23		0					Bare land, soil 0-6 inches moderately dry, below 6 inches moist; beds 8-10 inches.	
17-18			.02						0						
18-19	11:15 p. m.	5 46	.78	.72	.44	.32	.14		0						
19-25			.10						0						
25	5:26 a. m.	4 24	.96	1.44	1.16	.80	.22		0					Bare land, soil moist; beds 8-10 inches.	
25-28			.06						0						
Total			2.79						0						
March: 1-25			.15						0						
25	8:18 a. m.	4 19	1.07	2.16	1.44	1.16	.25		0					Bare land, soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.	
25-31			.10						0						
Total			1.32						0						
April: 1-16			.34						0						
16	4:42 a. m.	1 8	.26	.84	.52	.34	.23		0						
16-26			.08						0						
26	6:00 a. m.	43	.32	1.20	.84	.62	.45		0					Bare land, soil 0-6 inches moderately dry, below 6 inches moist; cotton planted Apr. 12.	
26-30			.07						0						
Total			1.07						0						
May: 1-7			.18						0						
7	10:02 p. m.	55	.39	1.32	.92	.70	.42		0					Cotton 3 inches high; soil moderately dry; cultivated May 4.	
7-16			.07						0						
16	5:00 a. m.	3 15	1.13	2.52	1.60	1.10	.35		0						
16			.13						0					Same as May 7, except cotton 4 inches high.	
17	6:25 a. m.	1 35	.89	3.00	1.80	1.28	.56	6:40 a. m.	.099	0.406	0.149				
17			.02						0						
17	6:45 p. m.	1 55	.41	.60	.44	.34	.21	8:10 p. m.	.038	.181	.0664	8:33 p. m.	23	.139	
18	6:50 a. m.	30	.44	2.52	1.72	.86	.88	6:54 a. m.	.12	1.12	.411	7:06 a. m.	12		
19			.04						0						
20	12:45 a. m.	1 19	.98	1.92	1.44	1.24	.74	1:02 a. m.	.31	1.32	.485	1:30 a. m.	28	.0972	
20-31			.08						0					Cotton 4-5 inches high; soil wet and soft.	
Total			4.76						.57						

TABLE 15.—Summary of rainfall and run-off from watershed 2, April 1, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1939															
June:															
1-4			0.11						0						
4	4:50 a. m.	35	.38	1.80	1.04	0.74	0.65		0						
4	7:00 a. m.	1 25	.32	1.20	.76	.52	.22		0						
4-19			.31						0						
19	9:15 a. m.	2 3	1.13	2.88	2.32	1.46	.56		0						
19-30			.36						0						
Total			2.61						0						
July:															
1-31			.31						0						
August:															
1-16			.50						0						
16	12:02 a. m.	28	.35	2.28	1.20	.70	.75		0						
16-19			.14						0						
19	6:16 p. m.	1 14	.46	1.44	1.16	.88	.37		0						
20	2:44 p. m.	3 1	.67	1.32	.80	.62	.22		0						
20-31			.25						0						
Total			2.37						0						
September:															
1-30			.21						0						
October:															
1-8			0						0						
8	1:16 p. m.	24	.35	1.44	1.04	.70	.88		0						
9			.08						0						
9	8:30 p. m.	1 15	.33	.72	.40	.28	.26		0						
10	12:30 a. m.	3 48	.76	2.16	1.36	.78	.20		0						
10-27			.07						0						
27	12:45 p. m.	20	.27	1.80	1.00	.54	.81		0						
27-31			0						0						
Total			1.86						0						
November:															
1-11			.21						0						
11	3:30 a. m.	4 0	.28	.24	.24	.18	.07		0						
11	10:35 a. m.	4 50	.65	.48	.40	.36	.13		0						
11-29			.54						0						
29-30	4:00 p. m.	13 40	.45	.24	.12	.10	.03		0						
30			.26						0						
Total			2.39						0						
December:															
1-22			0						0						
22	4:30 a. m.	10 42	.95	1.56	.88	.60	.09		0						
22-31			.25						0						
Total			1.20						0						

TABLE 16.—Summary of rainfall and run-off from watershed 3, December 7, 1938, to December 31, 1939

LOCATION: Latitude 31°27'29'', longitude 96°53'12''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 450 feet. Area, 3.09 acres.

Shape factor.—0.667.

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 1.91 percent.

Soil.—Predominating soil is Houston black clay, which commonly has a depth of 60 inches or more, to the somewhat weathered underlying calcareous material. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined and there is no evidence of serious erosion.

Special features.—The watershed is artificially diked on three sides and has concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in cotton, which was planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station W-3a (fig. 2). Before December 19, 1938, it was measured at gage W-4. No nonrecording rain

gages were used. Snowfall was measured by weighing-recording rain gage W-3a.

Run-off.—Run-off was measured by type H measuring flume with flat floor and 3-foot depth (sidewalls extended ½-foot higher), and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1- and 0.2-foot stage (0.035 and 0.12 second-foot), and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 p. m. and May 18, 1939), intake stoppage, especially on receding stages (May 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss are obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Nonrecording well 650 (fig. 4) was used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious collection gutters were covered September 8, 1939.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 24.75 inches. Maximum 5 minutes, 3.36 inches per hour, May 18, 1939. Maximum 15 minutes, 2.38 inches per hour, June 19, 1939. Maximum 30 minutes, 1.52 inches per hour, June 19, 1939.

Run-off.—Annual run-off amount 1939, 0.69 inch. Maximum rate of run-off, 0.449 inch per hour (1.40 second-feet), May 20, 1939. No flow for long periods.

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In. 0.11	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.- ft.	In. per hr.	Hr. min.	Tons per acre		
1938															
December:															
1-22			0.11						0						
22			.12						0						
22-23	1:30 p. m.	6 36	1.80	1.32	1.24	0.88	0.27		0						
23-25			.15						0						
25	11:00 a. m.	6 35	.33	.24	.16	.14	.05		0						
25-31			.23						0						
Total			2.74						0						
1939															
January:															
1-8			.08						0						
8	5:00 p. m.	2 0	.80	1.68	1.28	1.04	.40		0						
8-11			.33						0						
11	12:35 p. m.	7 23	1.02	1.08	.64	.42	.14		0						
11-12	10:20 p. m.	7 42	.97	.84	.44	.40	.12		0						
12-23			.38						0						
23	4:30 a. m.	5 30	.27	.24	.12	.10	.05		0						
23-31			.03						0						
Total			3.88						0						

TABLE 16.—Summary of rainfall and run-off from watershed 3, December 7, 1938, to December 31, 1939—Continued

Date	Rainfall								Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss	
				Maximum for			Average rate for duration of rain			Sec.-ft.	In. per hr.					
				5-minute period	15-minute period	30-minute period										
1939																
February:		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.							
1-17			0.45						0							
17	10:30 a. m.	4 5	.45	1.80	1.16	0.62	0.11		0						Bare land, soil 0-6 inches moderately dry, below 6 inches moist; beds 8-10 inches.	
17-19			.04						0							
19	1:30 a. m.	5 11	.72	.60	.40	.32	.14		0							
19-25			.10						0							
25	5:26 a. m.	4 19	1.06	1.32	1.00	.86	.24		0						Bare land, soil moist; beds 8-10 inches.	
25-28			.08						0							
Total			2.90						0							
March:																
1-25			.14						0							
25	8:16 a. m.	3 47	1.16	1.80	1.60	1.32	.31		0						Bare land, soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.	
25-31			.14						0							
Total			1.44						0							
April:																
1-16			.32						0							
16	4:42 a. m.	1 8	.27	.84	.60	.48	.24		0							
16-26			.09						0							
26	6:00 a. m.	38	.36	1.68	1.04	.70	.57		0						Bare land, soil 0-6 inches moderately dry, below 6 inches moist; cotton planted Apr. 12.	
26-30			.08						0							
Total			1.12						0							
May:																
1-7			.23						0							
7	10:00 p. m.	1 0	.38	1.08	.84	.68	.38		0						Cotton 3 inches high, soil moderately dry; cultivated May 4.	
7-16			.10						0							
16	4:55 a. m.	3 5	1.21	2.88	1.74	1.22	.39		0						Same as May 4, except cotton 4 inches high.	
16			.11						0							
17	6:23 a. m.	1 27	1.03	1.32	1.32	1.30	.71	6:30 a. m.	.20	0.8320	0.267	6:52 a. m.	26	0.719		
17			.02						0							
17	6:45 p. m.	1 45	.42	.60	.52	.40	.24	7:53 p. m.	.026	.1022	.0328	8:25 p. m.	32			
18	6:50 a. m.	20	.43	3.36	1.68		1.29	6:51 a. m.	.12	.629	.202	7:00 a. m.	9			
18-20			.05						0							
20	12:35 a. m.	1 22	.96	1.44	1.28	1.16	.70	12:52 a. m.	.34	1.398	.449	1:30 a. m.	38	.345	Cotton 4-5 inches high, soil wet and soft.	
20-31			.05						0							
Total			4.99						.69							
June:																
1-4			.17						0							
4	4:49 a. m.	2 35	.71	1.92	1.04	.70	.27		0						Cotton 8-10 inches high, squaring, soil moist; cultivated May 26.	
4-19			.30						0							
19	9:16 a. m.	2 39	1.29	2.88	2.38	1.52	.49		0						Cotton 12-14 inches high, squaring soil 0-6 inches moderately dry, below 6 inches moist; cultivated June 12.	
19-30			.18						0							
Total			2.65						0							
July:																
1-31			.34						0						July 19: Cotton 18-20 inches high, bolting; soil dry, surface loose, cracks 1-2 feet deep; cultivated July 18.	
August:																
1-4			.04						0							
4	7:10 a. m.	2 14	.32	.48	.28	.20	.14		0						Cotton 18-20 inches high, opening, some dead cotton; soil dry, surface loose, cracks 1-2 inches wide, 2-3 feet deep.	
4-16			.08						0							
16	12:02 p. m.	18	.28	2.16	.96		.93		0							
16-19			.08						0							
19	6:18 a. m.	1 2	.50	1.56	1.24	.92	.48		0						Do.	
20	2:45 p. m.	2 50	.64	1.32	1.16	.86	.22		0							
20-31			.34						0							
Total			2.28						0							

TABLE 16.—Summary of rainfall and run-off from watershed 3, December 7, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off						Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss	
				Maximum for—			Average rate for duration of rain									
				5-minute period	15-minute period	30-minute period										
				In. per hr.	In. per hr.	In. per hr.	In. per hr.									
1939																
September: 1-30		Hr. min.	In. .24						In. 0	Sec.- ft.	In. per hr.		Hr. min.	Tons per acre	Sept. 29: Same as Aug. 4 except many leaves stripped by worms; all cotton open.	
October: 1-8			0						0							
8	1:13 p. m.	22	.31	1.20	0.96	0.62	0.85		0							
9			.10						0							
9	8:31 p. m.	1 15	.35	.72	.40	.32	.28		0							
10			.02						0							
10	1:51 a. m.	1 52	.70	1.20	1.20	.78	.52		0							
10-27			.07						0							
27	12:42 p. m.	23	.31	2.28	1.20		.81		0							
27-31			0						0							
Total			1.86						0							
November: 1-11			.23						0						Nov. 10: Same as Oct. 27.	
11	3:41 p. m.	2 29	.28	.24	.24	.18	.11		0							
11	9:25 p. m.	4 42	.66	.48	.36	.34	.14		0							
11-29			.29						0							
29-30	2:30 p. m.	16 1	.45	.60	.36	.20	.03		0							
30			.19						0							
Total			2.10						0							
December: 1-22			0						0							Oats 3-5 inches high; soil 0-2 inches dry, moderately moist below, cracks almost closed.
22	4:30 a. m.	6 17	.72	1.32	.96	.62	.11		0							
22-31			.23						0							
Total			.95						0							

TABLE 17.—Summary of rainfall and run-off from watershed 5, October 1, 1938 to, December 31, 1939

LOCATION: Latitude 31°27'46", longitude 96°53'00".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 450 feet. Area, 3.09 acres.

Shape factor.—0.667.

Slope.—48 percent of the watershed has a slope of 1 to 3 percent; 52 percent, 3 to 6 percent. Average slope is 3.27 percent.

Soil.—Predominating soil is Houston black clay, shallow phase, which has a depth of 36 inches or more; about 60 percent has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined and there is no evidence of serious erosion.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in corn during 1938, cotton during 1939. Both were planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station W-2a (fig. 2). No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage W-2a.

Run-off.—Run-off was measured by type H measuring flume of 3-foot depth and sloping floor, and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1 and 0.2-foot stage (0.035 and 0.12 second-foot) and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 p. m. and May 18, 1939), intake stoppage, especially on receding stages (May 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Recording well 663 (fig. 5) was used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious collection gutters were covered December 8, 1939, and one-half foot of freeboard was added to the blades and side walls of the H flume on November 24, 1939, increasing the capacity from 30 to 45 second-feet.

TABLE 17.—Summary of rainfall and run-off from watershed 5, October 1, 1938, to December 31, 1939—Continued

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 25.40 inches. Maximum 5 minutes, 3.84 inches per hour, May 18, 1939. Maximum 15 minutes, 2.28 inches per hour, May 17 and June 19, 1939. Maximum 30 minutes, 1.56 inches per hour,

May 17 and June 19, 1939.

Run-off.—Annual run-off amount 1939, 1.22 inches. Maximum rate of run-off, 1.66 inches per hour (5.19 second-feet), May 18, 1939. No flow for long periods.

Date	Rainfall							Run-off						Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1938															
September:															
1-11	9:20 a. m.	1 10	0.05						0						
11			.77	1.80	1.72	1.12	0.66		0						
11-30			.05						0						
Total			.87						0						
October:															
1-31			.16						0						
November:															
1-30			.73						0						
December:															
1-22			.09						0						
22	10:26 a. m.	3 24	1.18	1.68	1.28	.90	.35		0						
22-25	7:15 p. m.	2 32	.71	1.20	.80	.56	.28		0						
25	11:00 a. m.	7 45	.31	.36	.12	.10	.04		0						
25-31			.24						0						
Total			2.75						0						
1939															
January:															
1-8			.06						0						
8	4:30 p. m.	2 45	.86	2.04	1.32	1.08	.31		0						
8-11			.31						0						
11	12:30 p. m.	5 46	1.12	1.44	.56	.36	.19		0						
11-12	11:55 p. m.	7 3	1.00	1.32	.64	.42	.14		0						
12-23			.38						0						
23	4:30 a. m.	5 30	.28	.36	.20	.12	.05		0						
23-31			.03						0						
Total			4.05						0						
February:															
1-17			.47						0						
17	11:15 a. m.	2 13	.46	1.92	1.24	.70	.21		0						
17-18			.01						0						
18-19	11:00 p. m.	7 5	.76	.72	.40	.30	.11		0						
19-25			.09						0						
25	5:28 a. m.	5 2	1.11	1.44	1.20	.96	.22		0						
25-28			.07						0						
Total			2.97						0						
March:															
1-25			.12						0						
25	8:19 a. m.	3 12	1.14	2.40	1.52	1.24	.36		0						
25-31			.09						0						
Total			1.35						0						
April:															
1-26			.71						0						
26	6:02 a. m.	48	.34	2.16	1.16	.64	.42		0						
26-30			.05						0						
Total			1.10						0						
Cornstalks; thin cover of grass 6-12 inches high; soil hard, dry, cracks 1-2 inches wide, 2-3 feet deep.															
Nov. 7: Same as Sept. 11, except soil 0-2 inches moist, dry below; cracks 1-2 inches wide, 2-3 feet deep.															
Same as Nov. 7, except soil 0-3 inches dry, 3-6 inches moist, dry below; cracks 1-2 inches wide, 2-3 feet deep.															
Same as Dec. 22, except soil 0-12 inches moist; cracks partly sealed, dry and cracked below.															
Bare land; bedded Jan. 5, beds 8-10 inches; soil 0-24 inches moist, loose.															
Bare land; soil moist, cracks closed; beds 8-10 inches.															
Bare land; soil 0-6 inches moderately dry, below 6 inches moist; beds 8-10 inches.															
Bare land; soil moist; beds 8-10 inches.															
Bare land; soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.															
Bare land; soil 0-6 inches moderately dry, below 6 inches moist; cotton planted Apr. 12.															

TABLE 17.—Summary of rainfall and run-off from watershed 5, October 1, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off							Remarks
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise	Silt loss	
				Maximum for—			Average rate for duration of rain			Sec.-ft.	In. per hr.				
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.				Hr. min.	Tons per acre	
May:			0						0						
1-7															
7	4:35 p. m.	40	.28	1.08	0.56	0.46	0.42		0					Cotton 3 inches high; soil moderately dry; cultivated May 4.	
7			.08						0						
7-16	10:04 p. m.	56	.37	1.32	1.00	.70	.40		0						
16	4:59 a. m.	4 16	1.19	2.52	1.64	1.14	.28		0					Same as May 7, except cotton 4 inches high.	
16			.09						0						
17	6:23 a. m.	1 52	1.01	2.88	2.28	1.56	.54	6:33 a. m.	.28	2.29	0.734	6:45 a. m.	12	} 2.12	
17			.02						0						
17	6:45 p. m.	1 45	.42	.84	.68	.40	.24	7:47 p. m.	.12	.367	.118	8:00 p. m.	13		
18	6:49 a. m.	35	.51	3.84	1.96	1.00	.87	6:53 a. m.	.27	5.19	1.66	7:00 a. m.	7		
19			.04						0						
20	12:39 a. m.	1 54	.93	1.56	1.36	1.14	.49	1:02 a. m.	.55	2.26	.725			1.46	
20-31			.02						0					Cotton 4-5 inches high; soil wet and soft; cultivated May 4.	
Total			4.96						1.22						
June:									0						
1-4			.19						0						
4	4:48 a. m.	42	.42	2.04	1.24	.80	.60		0					Cotton 8-10 inches high, squaring; soil moist; cultivated May 26.	
4	7:00 a. m.	1 51	.39	1.20	1.04	.60	.21		0						
4-19			.35						0						
19	9:17 a. m.	1 31	1.10	3.00	2.28	1.56	.72		0					Cotton 12-14 inches high, squaring; soil 0-6 inches moderately dry, below 6 inches moist; cultivated June 6.	
19-30			.30						0						
Total			2.75						0						
July:									0						
1-31			.29						0					July 19: Cotton 18-20 inches high, bolling; soil dry, surface loose; cracks 1-2 feet deep; cultivated July 15.	
August:									0						
1-19			.72						0						
19	6:14 a. m.	1 16	.62	2.52	1.48	1.00	.50		0					Aug. 4-20: Cotton 18-20 inches high, opening, some dead cotton; soil dry, surface loose; cracks 1-2 inches wide, 2-3 feet deep.	
20			.69						0						
20-31	2:46 p. m.	1 14	.19	1.80	1.16	.88	.56		0						
Total			2.22						0						
September:									0						
1-30			.31						0					Sept. 29: Same as Aug. 4, except many leaves stripped by worms; all cotton open.	
October:									0						
1-8			0						0						
8	1:20 p. m.	20	.33	1.44	.96	.66	.66		0						
9			.07						0						
9	8:32 p. m.	2 33	.36	.96	.40	.32	.14		0						
10	12:30 a. m.	4 30	.75	2.28	1.44	.80	.09		0					Same as Sept. 29, except picking completed.	
10-27			.07						0						
27	12:43 p. m.	27	.26	1.20	.88	.52	.26		0					Oats 2-3 inches high; soil dry, cracked, surface loose; oats planted Oct. 16.	
27-31			0						0						
Total			1.84						0						
November:									0						
1-11			.23						0						
11	3:40 a. m.	3 50	.28	.36	.28	.20	.07		0					Nov. 10: Same as Oct. 27.	
11			.02						0						
11	10:40 a. m.	5 5	.66	.36	.36	.36	.13		0						
11-29			.54						0						
29-30	2:30 p. m.	17 10	.47	.12	.08	.08	.03		0					Oats 2-4 inches high; soil 0-12 inches moist, dry and cracked below.	
30			.19						0						
Total			2.39						0						
December:									0						
1-22			0						0						
22	4:50 a. m.	6 55	.68	1.56	.96	.58	.10		0					Oats 3-5 inches high; soil 0-2 inches dry, moderately moist below; cracks almost closed.	
22			.27	.48	.24	.14	.07		0						
22-31	1:22 p. m.	3 40	.22						0						
Total			1.17						0						

TABLE 18.—Summary of rainfall and run-off from watershed 6, November 9, 1938, to December 31, 1939

LOCATION: Latitude 31°27'13'', longitude 96°52'47''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 410 feet. Area, 3.04 acres.

Shape factor.—0.787.

Slope.—38 percent of the watershed has a slope of 1 to 3 percent; 62 percent, 3 to 6 percent. Average slope is 3.18 percent.

Soil.—Predominating soil is Houston black clay, shallow phase, which has a depth of 36 to 60 inches. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—One old gully, which has been nearly filled by grading in from adjacent areas, extended the full length of the watershed. There are several other minor rills and one very active seepy area just downstream from the collection gutters.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in corn during 1938, cotton during 1939. Both were planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at recording rain gage at station W-7 (fig. 2). It was measured at gage W-5

on December 25, 1938, and January 8, 9, 11, 12, 1939. No nonrecording rain gages were used. Snowfall was measured by weighing-recording gage W-7.

Run-off.—Run-off was measured by type H measuring flume of 3-foot depth and flat floor, and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1- and 0.2-foot stage (0.035 and 0.12 second-foot) and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 p. m. and May 18, 1939), intake stoppage, especially on receding stages (May 17, 18, 20, 1939), shifts in gage elevations, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Nonrecording well 118 (fig. 4) was used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious collection gutters were covered December 7, 1939, and one-half foot of freeboard was added to the blades and side walls of the H flume on October 24, 1939, increasing the capacity from 30 to 45 second-feet.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 25.81 inches. Maximum 5 minutes, 3.84 inches per hour, May 18, 1939. Maximum 15 minutes, 2.32 inches per hour, June 19, 1939. Maximum 30 minutes, 1.42 inches per hour, May 17, 1939.

Run-off.—Annual run-off amount 1939, 1.51 inches. Maximum rate of run-off, 2.25 inches per hour (6.90 second-feet), May 18, 1939. No flow for long periods.

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec- ft.	In. per hr.		Hr. min.	Tons per acre	
November: 1-3			0.10						0						Cornstalks; thin cover of grass 6-12 inches; soil hard, dry; cracks 1-2 inches wide, 2-3 feet deep.
3	10:00 a. m.	2 48	.32	1.08	0.48	0.30	0.11		0						
3-30			.23						0						
Total			.65						0						
December: 1-22			.18						0						Same as Nov. 3, except soil 0-3 inches dry, 3-6 inches moist, dry below; cracks 1-2 inches wide, 2-3 feet deep.
22	10:28 a. m.	9 26	1.74	1.20	.96	.76	.18		0						
22-25			.22						0						
25	11:05 a. m.	11 30	.59	.24	.16	.14	.05		0						
25-31			0						0						Dec. 25: Same as Dec. 22, except soil 0-12 inches moist; cracks partly sealed, dry and cracked below.
Total			2.73						0						

TABLE 18.—Summary of rainfall and run-off from watershed 6, November 9, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off						Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939				In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
January:		Hr. min.	In.												
1-8			0.05						0						
8-9	5:10 p. m.	2 0	.86	1.80	1.24	1.12	0.43		0					Bare land; soil 0-24 inches, moist, loose; bedded Jan. 5, beds 8-10 inches.	
9-11			.34						0						
11	12:30 p. m.	6 11	1.00	.72	.48	.36	.16		0						
11-12	10:30 p. m.	10 0	.92	.84	.48	.36	.09		0					Bare land; soil moist; cracks closed; beds 8-10 inches.	
12-23			.40						0						
23	4:27 a. m.	4 48	.27	.24	.20	.14	.06		0						
23-31			0						0						
Total			3.90						0						
February:															
1-9			.10						0						
9	7:38 p. m.	12	.26	2.76	1.16	.52	1.30		0						
9-17			.19						0						
17	10:40 a. m.	4 1	.47	1.44	1.00	.58	.12		0					Bare land; soil 0-6 inches moderately dry, below 6 inches moist; beds 8-10 inches.	
17-18			0						0						
18-19	11:16 p. m.	6 46	.79	.72	.44	.26	.12		0						
19-25			.10						0						
25	5:30 a. m.	5 0	1.05	1.32	1.00	.84	.21		0					Bare land; soil moist; beds 8-10 inches.	
25-28			.05						0						
Total			3.01						0						
March:															
1-25			.16						0						
25	8:20 a. m.	5 40	1.06	1.68	1.52	1.20	.19		0					Bare land; soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.	
25-31			.06						0						
Total			1.28						0						
April:															
1-16			.46						0						
16	4:42 a. m.	1 8	.27	.96	.52	.34	.24		0						
16-26			.08						0						
26	6:02 a. m.	58	.39	1.32	1.04	.68	.40		0					Bare land; soil 0-6 inches moderately dry, below 6 inches moist; cotton planted Apr. 12.	
26-30			.09						0						
Total			1.29						0						
May:															
1-7			.15						0						
7	10:05 p. m.	1 55	.40	1.20	.88	.64	.21		0					Cotton 3 inches high; soil moderately dry; cultivated May 4.	
7-13			.10						0						
13-16			0						0						
16	4:56 a. m.	4 19	1.10	2.28	1.36	.96	.25		0					Same as May 7 except cotton 4 inches high.	
16			.11						0						
17	6:26 a. m.	1 34	.94	2.88	2.12	1.42	.61	6:31 a. m.	.34	2.85	0.929	6:39 a. m.	8	4.25	
17			.03						0						
17	6:50 p. m.	1 50	.45	.72	.52	.30	.25	7:25 a. m.	.14	.604	0.197				
18	6:51 a. m.	24	.49	3.84	1.92	.98	1.23	6:51 a. m.	.34	6.90	2.25	7:00 a. m.	9		
19			.06						0						
20	12:38 a. m.	1 27	1.06	1.92	1.32	1.20	.73	12:55 a. m.	.69	2.78	9.05			Cotton 4-5 inches high; soil wet and soft.	
20-31			.02						0						
Total			4.91						1.51						
June:															
1-4			.09						0						
4	4:49 a. m.	26	.36	1.80	.96	.72	.83		0					Cotton 8-10 inches, high squaring; soil moist; cultivated May 26.	
4	6:30 a. m.	2 35	.33	1.08	.80	.50	.13		0						
4-19			.34						0						
19	9:18 a. m.	3 41	1.13	2.64	2.32	1.36	.31		0					Cotton 12-14 inches high, squaring; soil 0-6 inches moderately dry, below 6 inches moist; cultivated June 6.	
19-30			.12						0						
Total			2.37						0						

TABLE 18.—Summary of rainfall and run-off from watershed 6, November 9, 1938, to December 31, 1939—Continued

Date	Rainfall								Run-off						Remarks
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise	Silt loss	
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In. 0.34	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In. 0	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1939															
July: 1-31														July 19: Cotton 18-20 inches high, bolting; soil dry, surface loose; cracks 1-2 inches deep; cultivated July 18.	
August: 1-16			.43						0						
16	12:02 p. m.	23	.43	2.88	1.56	0.86	1.12		0						
16-19			.20						0						
19	6:16 p. m.	1 14	.63	2.28	1.48	1.02	.51		0					Aug. 4-20: Cotton 18-20 inches high, opening; some dead cotton; soil dry, surface loose; cracks 1-2 inches wide, 2-3 feet deep.	
20	2:47 p. m.	2 58	.62	1.56	.96	.78	.21		0						
20-23			0						0						
23	5:52 a. m.	2 8	.29	1.08	.44	.36	.14		0						
23-31			.12						0						
Total			2.72						0						
September: 1-30			.34						0					Sept. 29: Same as Aug. 4, except many leaves stripped by worms; all cotton open.	
October: 1-8			0						0						
8	1:13 p. m.	22	.36	1.44	1.00	.72	.98		0						
9			.06						0						
9	8:29 p. m.	1 41	.34	.84	.40	.32	.20		0					Same as Sept. 29, except picking completed.	
10	12:30 a. m.	3 39	.88	2.16	1.40	.88	.24		0					Oct. 16: oats planted.	
10-27			.07						0					Oats 2-3 inches high; soil dry, cracked, surface loose.	
27	12:45 p. m.	20	.28	1.44	.96	.48	.84		0						
27-31			0						0						
Total			1.99						0						
November: 1-11			.25						0					Nov. 10: Same as Oct. 27.	
11	4:00 a. m.	1 45	.28	.36	.28	.20	.16		0						
11	9:50 a. m.	5 10	.69	.48	.40	.38	.13		0						
11-29			.67						0						
29-30	8:00 p. m.	10 30	.41	.24	.12	.10	.04		0					Oats 2-4 inches high; soil 0-12 inches moist, dry and cracked below.	
30			.27						0						
Total			2.57						0						
December: 1-22			0						0						
2	4:30 a. m.	10 48	.93	.96	.72	.54	.09		0					Oats 3-5 inches high; soil 0-2 inches dry, moderately moist below, cracks almost closed.	
22-31			.22						0						
Total			1.15						0						

TABLE 19.—Summary of rainfall and run-off from watershed 7, March 11, 1938, to December 31, 1939

LOCATION: Latitude 31°28'11", longitude 96°52'59".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 470 feet. Area, 3.15 acres.

Shape factor.—0.620.

Slope.—11 percent of the watershed has a slope of less than 1 percent; 89 percent, 1 to 3 percent. Average slope is 1.67 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that may take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined and

there is no evidence of serious erosion. There is a slightly seepy area just downstream from the collection gutters.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in corn during 1938, cotton during 1939. Both were planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station 82 (fig. 2). It was measured at gage 69

TABLE 19.—Summary of rainfall and run-off from watershed 7, March 11, 1938, to December 31, 1939—Continued

before March 14, 1938 and at gage W-1 on July 9, 1938. No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage 82.

Run-off.—Run-off was measured by type H measuring flume with flat floor and 3-foot depth (side walls extended ½-foot higher), and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1- and 0.2-foot stage (0.035 and 0.12 second-foot) and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (March 28, 1938, May 17 p. m. and May 18, 1939), intake stoppage, especially on receding stages (March 28, April 15, 1938, May 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt

sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Recording well TW-10 (fig. 4) was used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious gutters were covered August 21, 1939, and one-half foot of freeboard was added to the blades and side walls of the H flume on January 27, 1939, increasing the capacity from 30 to 45 second-feet.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 24.81 inches. Maximum 5 minutes, 6.84 inches per hour, March 28, 1938. Maximum 15 minutes, 2.76 inches per hour, March 28, 1938. Maximum 30 minutes, 1.86 inches per hour, July 9, 1938.

Run-off.—Annual run-off amount 1939, 1.19 inches. Maximum rate of run-off, 1.10 inches per hour (3.50 second-feet), May 18, 1939. No flow for long periods.

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
March:															
1-22			0.32												
22	11:52 a. m.	1 18	.42	1.20	0.72	0.56	0.32		0					Bare land; soil moist; corn planted Mar. 12.	
22-27			0						0						
27	12:08 a. m.	1 42	.30	1.20	.56	.30	.18		0					Corn 2-3 inches high; soil moist.	
27			.03						0						
27	6:40 a. m.	2 5	.29	.60	.32	.24	.14		0						
28	3:43 p. m.	1 12	1.05	6.84	2.76	1.42	.88	3:45 p. m.	0.55	0.560	0.176				
28-31			.05						0						
Total			2.46						0.55						
April:															
1-7			.18						0						
7	4:18 a. m.	3 9	.52	.48	.32	.24	.16		0					Corn 3-5 inches high; soil moist.	
7-14			0						0						
14-15	11:52 p. m.	1 50	.58	1.80	.96	.52	.32		0					Corn 2-3 inches high; recovering from freeze of Apr. 8. Soil moist, surface loose, cultivated Apr. 13.	
15			.14						0						
15	8:40 a. m.	3 50	1.00	1.32	1.04	1.02	.26	8:45 a. m.	.26	1.12	.353			1.149	
15	2:15 p. m.	1 32	.56	1.08	.92	.72	.37	2:20 p. m.	.21	1.36	.429				
15-26			.45						0						
26	6:00 a. m.	58	.29	1.20	.64	.38	.30		0					Corn 6-10 inches high; soil moist.	
26-30			.27						0						
Total			3.99						.47						
May:															
1-7			.26						0					May 4: Corn 8-15 inches high; soil moist.	
7	10:32 a. m.	4 18	.38	.24	.20	.18	.09		0					Corn 10-18 inches high; soil moist.	
7-13			.12						0						
13	12:15 a. m.	2 20	.67	1.80	1.24	.72	.29		0					Corn 12-30 inches high; soil moist; surface loose. Cultivated May 11.	
13-23			.10						0						
23	12:30 a. m.	2 20	.88	2.16	1.68	.90	.38		0					Corn 18-36 inches high; soil moist.	
23-31			0						0						
Total			2.41						0						
June:															
1-4			0						0						
4	3:20 a. m.	4 19	.94	2.52	1.40	.82	.22		0					Corn 21-72 inches high, silking; soil moist, surface loose; cultivated May 26.	
4-8			0						0						
8	1:10 p. m.	1 13	.36	.60	.48	.42	.30		0					Corn 36-72 inches high, eared; soil moist.	
9	2:10 a. m.	2 20	.36	.24	.24	.22	.15		0						
9-17			.39						0						
17	6:10 a. m.	2 5	.39	.72	.60	.56	.19		0					Do.	
17-21			0						0						
21	12:36 p. m.	24	.72	3.96	2.48	1.44	1.80		0					Do.	
21-30			0						0						
Total			3.16						0						

TABLE 19.—Summary of rainfall and run-off from watershed 7, March 11, 1939, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain			Sec.-ft.	In. per hr.				
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.				Hr. min.	Tons per acre	
July: 1-9			0						0						
9	4:58 p. m.	32	.97	3.48	2.44	1.86	1.82		0					Corn 36-72 inches high, earned; soil moderately dry; cracks 6-12 inches deep.	
9-19			.03						0						
19	7:10 a. m.	3 50	.57	.84	.72	.48	.15		0					Do.	
19-22			.22						0						
22	4:10 a. m.	6 24	.32	.24	.24	.16	.05		0					Do.	
22-31			.36						0						
Total			2.47						0						
August: 1-10			.10						0						
10	2:54 p. m.	37	.75	2.64	1.64	.86	1.22		0					Corn mature, dry; undergrowth of grass 6-12 inches; surface soil very dry and hard; cracks ½-1 inch wide, 1-2 feet deep.	
10-31			0						0						
Total			.85						0						
September: 1-11			.06						0						
11	9:21 a. m.	1 39	.75	2.16	1.80	1.12	.45		0					Same as Aug. 10, except cracks 1-2 inches wide and 2-3 feet deep.	
11-30			.04						0						
Total			.85						0						
October: 1-31			.16						0						
November: 1-30			.83						0					Nov. 7: Cornstalks; soil 0-2 inches moist, dry below; cracks 1-2 inches wide, 2-3 feet deep.	
December: 1-22			.21						0						
22	2:16 p. m.	2 49	1.04	1.08	1.08	.78	.37		0					Same as Nov. 7 except soil 0-3 inches dry, 3-6 inches moist, dry below; cracks 1-2 inches wide, 2-3 feet deep.	
22	7:20 p. m.	2 56	.68	.84	.80	.64	.23		0						
22-25			.23						0						
25	10:00 a. m.	11 35	.54	.24	.16	.12	.05		0					Same as Dec. 22 except soil 0-12 inches moist, cracks partly sealed, dry and cracked below.	
25-31			.06						0						
Total			2.76						0						
1939															
January: 1-8			0.06						0						
8	5:00 p. m.	2 18	.87	1.68	1.28	1.08	.38		0					Bare land; bedded Jan. 5; soil 0-24 inches moist, loose; beds 8-10 inches.	
8-11			.25						0						
11	12:30 p. m.	6 50	1.16	1.20	.68	.44	.17		0					Bare land; soil moist, cracks closed; beds 8-10 inches.	
11-12			.96	.84	.44	.40	.11		0						
12-23			.46						0						
23	4:30 a. m.	4 38	.25	.36	.20	.12	.05		0						
23-31			.04						0						
Total			4.05						0						
February: 1-17			.49						0						
17	10:56 a. m.	3 16	.48	2.04	1.20	.70	.15		0					Bare land, soil 0-6 inches moderately dry, below 6 inches moist; beds 8-10 inches.	
17-19			.02						0						
19	1:00 a. m.	5 53	.76	.48	.36	.30	.13		0						
19-25			.07						0						
25	5:24 a. m.	3 41	1.03	1.20	1.04	.80	.28		0					Bare land; soil; moist beds 8-10 inches	
25-28			.06						0						
Total			2.91						0						
March: 1-25			.25						0						
25	6:58 a. m.	5 17	1.09	1.56	1.32	1.04	.21		0					Bare land; soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.	
25-31			.07						0						
Total			1.41						0						

TABLE 19.—Summary of rainfall and run-off from watershed 7, March 11, 1939, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
April: 1-16			0.31						0						Apr. 25-26: Bareland; soil 0-6 inches moderately dry, below 6 inches moist; cotton planted Apr. 12.
16	4:43 a. m.	1 7	.25	0.48	0.40	0.34	0.22	0							
16-30			.35					0							
Total			.91					0							
May: 1-7			0					0							Cotton 3 inches high; soil moderately dry; cultivated May 4.
7	4:33 p. m.	32	.30	.96	.56	.46	.56	0							
7	10:02 p. m.	48	.36	.84	.60	.58	.45	0							
7-16			.08					0							Same as May 7 except cotton 4 inches high.
16	4:55 a. m.	3 20	1.20	2.28	1.56	1.12	.36	0							
16			.09					0							
17	6:23 a. m.	2 2	.97	3.24	2.24	1.72	.48	6:36 a. m.	.35	2.95	0.931	6:45 a. m.	9	1.327	Cotton 4-5 inches high; soil wet and soft.
17	6:45 p. m.	1 55	.42	.60	.52	.40	.22	7:36 p. m.	.092	.404	.127	8:20 p. m.	44		
18	6:50 a. m.	19	.42	3.24	1.56	.80	1.33	6:54 a. m.	.25	3.50	1.10	7:01 a. m.	7		
19			.08						0						Cotton 4-5 inches high; soil wet and soft.
20	12:38 a. m.	1 37	.89	1.56	1.28	1.06	.55	1:00 a. m.	.50	3.30	1.04	1:20 a. m.	20	1.263	
20-31			0					0							
Total			4.81					1.19							
June: 1-4			.48					0							Cotton 8-10 inches high, squaring; soil moist; cultivated May 26.
4	6:40 a. m.	1 7	.32	1.08	.72	.48	.29	0							
4-19			.51					0							
19	9:17 a. m.	1 31	1.02	1.92	1.72	1.44	.67		0						Cotton 12-14 inches high, squaring; soil 0-6 inches moderately dry; below 6 inches moist; cultivated June 12.
19-30			.33					0							
Total			2.66					0							
July: 1-31			.38					0							July 19: Cotton 18-20 inches high, bolting; soil dry, surface loose; cracks 1-2 feet deep; cultivated July 18.
August: 1-4			.03					0							
4	6:50 a. m.	3 50	.40	.48	.36	.28	.10	0							
4-19			.10					0							Do.
19	6:13 p. m.	1 17	.83	2.28	1.56	1.12	.65	0							
20	2:44 p. m.	3 16	.68	1.44	1.12	.90	.20	0							
20-31			.19					0							Same as Aug. 4, except many leaves stripped by worms; all cotton open
Total			2.23					0							
September: 1-30			.30					0							
October: 1-8			0					0							Same as Sept. except all cotton picked. Oct. 27: Oats 2-3 inches high; soil dry, cracked, surface loose; oats planted Oct. 16.
8	1:18 p. m.	22	.36	1.92	1.16	.70	.98	0							
9			.08					0							
9	8:28 p. m.	1 22	.38	.84	.52	.38	.28	0							Oats 2-4 inches high; soil 0-12 inches moist, dry and cracked below
10	12:35 a. m.	3 05	.65	1.44	1.12	.68	.21	0							
10-31			.33					0							
Total			1.80					0							
November: 1-11			.28					0							Nov. 10: Same as Oct. 27.
11	4:00 a. m.	3 30	.25	.24	.24	.18	.07	0							
11	9:00 a. m.	6 0	.65	.36	.36	.34	.11	0							
11-29			.52					0							Oats 2-4 inches high; soil 0-12 inches moist, dry and cracked below
29-30	2:30 p. m.	16 53	.61	.24	.16	.12	.04	0							
Total			2.31					0							
December: 1-22			0					0							Oats 3-5 inches high; soil 0-2 inches dry, moderately moist below, cracks almost closed.
22	4:30 a. m.	14 23	.81	.84	.60	.38	.06	0							
22-31			.23					0							
Total			1.04					0							

TABLE 20.—Summary of rainfall and run-off from watershed 11, March 2, 1938, to December 31, 1939

LOCATION: Latitude 31°28'02'', longitude 96°53'04''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 400 feet. Area, 3.23 acres.

Shape factor.—0.878.

Slope.—75 percent of the watershed has a slope of less than 1 percent; 25 percent, 1 to 3 percent. Average slope is 0.94 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined and there is no evidence of serious erosion.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in corn during 1938, cotton during 1939. Both were planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station 82 (fig. 2). It was measured at gage 69 before March 14, 1938. No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage 82.

Run-off.—Run-off was measured by type H measuring flume with flat floor and 3-foot depth (side walls extended ½-foot higher), and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1- and 0.2-foot stage (0.035 and 0.12 second-foot) and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on flume floor (March 28, 1938, May 17 p. m. and May 18, 1939), intake stoppage, especially on receding stages (March 28, April 15, 1938, May 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss are obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Recording wells 661 and TW-10 and nonrecording well 662 (fig. 4) were used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious collection gutters were covered December 6, 1939, and one-half foot of freeboard was added to the blades and side walls of the H flume on November 8, 1939, increasing the capacity from 30 to 45 second-feet.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 24.81 inches. Maximum 5 minutes, 6.84 inches per hour, March 28, 1938. Maximum 15 minutes, 2.76 inches per hour, March 28, 1938. Maximum 30 minutes, 1.72 inches per hour, May 17, 1939.

Run-off.—Annual run-off amount 1939, 0.78 inch. Maximum rate of run-off, 0.562 inch per hour (1.83 second-feet), May 20, 1939. No flow for long periods.

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
				In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec. ft.	In. per hr.		Hr. min.	Tons per acre	
1933		Hr. m ⁿ .	In.												
March:															
1-22			0.29						0						
22	11:52 a. m.	1 18	.42	1.20	0.72	0.56	0.32		0						
22-27			0						0						
27	12:08 a. m.	1 42	.30	1.20	.56	.30	.18		0						
27			.01						0						
27	6:40 a. m.	2 5	.29	.60	.32	.24	.14		0						
28	3:43 p. m.	1 12	1.05	6.84	2.76	1.42	.88	4:00 p. m.	.017	0.049	0.015	4:22 p. m.	22		
28-31			.01						0						
Total			2.37						.017						
April:															
1-7			.18						0						
7	4:18 a. m.	3 9	.52	.48	.32	.24	.16		0						
7-14			0						0						
14-15	11:52 p. m.	1 50	.58	1.80	.96	.52	.32		0						
15			.14						0						
15	8:40 a. m.	5 22	1.56	1.32	1.04	1.02	.29	8:42 a. m.	.65	1.38	.424			0.208	
15-26			.47						0						
26	6:00 a. m.	58	.29	1.20	.64	.38	.30		0						
26-30			.25						0						
Total			3.99						.65						

TABLE 20.—Summary of rainfall and run-off from watershed 11, March 2, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1938															
May: 1-7			0.26						0						May 4: Corn 10-18 inches high; soil moist.
7-13	10:32 a. m.	4 18	.38	0.24	0.20	0.18	0.09		0						Corn 12-20 inches high; soil moist.
13	12:15 a. m.	2 20	.67	1.80	1.24	.72	.29		0						Corn 12-30 inches high; soil moist, surface loose; cultivated May 9.
13-23			.10						0						
23	12:30 a. m.	2 20	.88	2.16	1.68	.90	.38		0						Corn 18-36 inches high; soil moist, surface loose; cultivated May 20.
23-31			0						0						
Total			2.41						0						
June:															
1-4			0						0						
4	3:20 a. m.	4 19	.94	2.52	1.40	.82	.22		0						Corn 21-51 inches high, silking; soil moist.
4-8			0						0						
8	1:10 p. m.	1 13	.36	.60	.48	.42	.30		0						Corn 36-72 inches high, silking; soil moist.
9	2:10 a. m.	2 20	.36	.24	.24	.22	.15		0						
9-17			.39						0						
17	6:10 a. m.	2 5	.39	.72	.60	.56	.19		0						Corn 36-72 inches high, eared; soil moist.
17-21			0						0						
21	12:36 p. m.	24	.72	3.96	2.48	1.44	1.80		0						
21-30			0						0						Do.
Total			3.16						0						
July															
1-9			0						0						
9	4:58 p. m.	32	.97	3.48	2.44	1.86	1.82		0						Corn 36-72 inches high, eared; soil moderately dry, cracks 6-12 inches deep.
9-19			.03						0						
19	7:10 a. m.	3 50	.57	.84	.72	.48	.15		0						Do.
19-22			.21						0						
22	4:10 a. m.	6 24	.32	.24	.24	.16	.05		0						Do.
22-30			.37						0						
Total			2.47						0						
August:															
1-10			.10						0						
10	2:54 p. m.	37	.75	2.64	1.64	.86	1.22		0						Corn mature, dry; undergrowth of hurrah grass 6-12 inches high; soil dry, hard; cracks ½-1 inch wide, 1-2 feet deep.
10-31			0						0						
Total			.85						0						
September:															
1-11			.06						0						
11	9:21 a. m.	1 39	.75	2.16	1.80	1.12	.45		0						Same as Aug. 10, except cracks 1-2 inches wide, 2-3 feet deep.
11-30			.04						0						
Total			.85						0						
October:															
1-31			.16						0						
November:															
1-30			.83						0						Nov. 7: Same as Sept. 11, except soil 0-2 inches moist, dry below.
December:															
1-22			.21						0						
22	2:16 p. m.	2 49	1.04	1.08	1.08	.78	.37		0						Same as Nov. 7, except soil 0-3 inches dry, 3-6 inches moist, dry below; cracks 1-2 inches wide, 2-3 feet deep.
22	7:20 p. m.	2 56	.68	.84	.80	.64	.23		0						
22-25			.25						0						
25	10:00 a. m.	11 35	.54	.24	.16	.12	.05		0						Same as Dec. 22, except soil 0-12 inches moist, cracks partially sealed, dry and cracked below.
25-31			.04						0						
Total			2.76						0						

TABLE 20.—Summary of rainfall and run-off from watershed 11, March 2, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain			Sec.-ft.	In. per hr.				
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.			Hr. min.	Tons per acre		
January:			0.06						0						
1-8	5:00 p. m.	2 18	.87	1.68	1.28	1.08	0.38		0						
8-11			.25						0						
11	12:30 p. m.	6 50	1.16	1.20	.68	.44	.17		0						
11-12	10:30 p. m.	8 27	.96	.84	.44	.40	.11		0						
12-23			.46						0						
23	4:30 a. m.	4 38	.25	.36	.20	.12	.05		0						
23-31			.04						0						
Total			4.05						0						
February:			.49						0						
1-17			.48	2.04	1.20	.70	.15		0						
17	10:56 a. m.	3 16							0						
17-19			.02						0						
19	1:00 a. m.	5 53	.76	.48	.36	.30	.13		0						
19-25			.07						0						
25	5:24 a. m.	3 41	1.03	1.20	1.04	.80	.28		0						
25-28			.06						0						
Total			2.91						0						
March:			.25						0						
1-25			1.09	1.56	1.32	1.04	.21		0						
25	6:58 a. m.	5 17							0						
25-31			.07						0						
Total			1.41						0						
April:			.31						0						
1-16			.25	.48	.40	.34	.22		0						
16	4:43 a. m.	1 7							0						
16-30			.35						0						
Total			.91						0						
May:			0						0						
1-7			.30	.96	.56	.46	.56		0						
7	4:33 p. m.	32							0						
7-16			.36	.84	.60	.58	.45		0						
16	10:02 p. m.	48	.07	1.20	1.56	1.12	.36		0						
16-17			1.20	2.28	1.56	1.12	.36		0						
17	4:55 a. m.	3 20	.09						0						
17	6:23 a. m.	2 2	.97	3.24	2.24	1.72	.48	6:42 a. m.	.15	0.796	0.245	6:57 a. m.	15		
17	6:45 p. m.	1 55	.42	.60	.52	.40	.22	7:50 p. m.	.059	.156	.0479	8:30 p. m.	40		
18	6:50 a. m.	19	.42	3.24	1.56	.80	1.33	6:50 a. m.	.21	.172	.529	7:07 a. m.	17		
19			.08						0						
20	12:38 a. m.	1 37	.89	1.56	1.28	1.06	.55	1:08 a. m.	.36	1.83	.562	1:30 a. m.	22		
20-31			.01						0						
Total			4.81						.78						
June:			.48						0						
1-4			.32	1.08	.72	.48	.29		0						
4	6:40 a. m.	1 7							0						
4-19			.51						0						
19	9:17 a. m.	1 31	1.02	1.92	1.72	1.44	.67		0						
19-30			.33						0						
Total			2.66						0						
July:			.38						0						
1-31									0						
August:			.03						0						
1-4			.40	.48	.36	.28	.10		0						
4	6:50 a. m.	3 50							0						
4-19			.10						0						
19	6:13 p. m.	1 17	.83	2.28	1.56	1.12	.65		0						
20	2:44 p. m.	3 16	.68	1.44	1.12	.90	.20		0						
20-31			.19						0						
Total			2.23						0						

TABLE 20.—Summary of rainfall and run-off from watershed 11, March 2, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks			
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss	
				Maximum for—			Average rate for duration of rain									
				5-minute period	15-minute period	30-minute period										
		Hr. min.	In. 0.30	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In. 0	Sec.- ft.	In. per hr.		Hr. min.	Tons per acre		
1939																
September: 1-30															Sept. 29: Same as Aug. 4 except many leaves stripped by worms; all cotton open.	
October: 1-8			0						0							
8	1:18 p. m.	22	.36	1.92	1.16	0.70	0.98		0							
9			.08						0							
9	8:28 p. m.	1 22	.38	.84	.52	.38	.28		0						Same as Sept. 29 except picking completed. Oct. 27: Oats 2-3 inches high, plant- ed Oct. 12; soil dry, cracked, sur- face loose.	
10	2:35 a. m.	3 5	.65	1.44	1.12	.68	.21		0							
10-31			.33						0							
Total			1.80						0							
November: 1-11			.28						0						Nov. 10 same as Oct. 27.	
11	4:00 a. m.	3 30	.25	.24	.24	.18	.07		0							
11	9:00 a. m.	6 0	.65	.36	.36	.34	.11		0							
11-29			.52						0							
29-30	2:30 p. m.	16 53	.61	.24	.16	.12	.04		0						Oats 2-4 inches high; soil 0-12 inches moist, dry and cracked below.	
Total			2.31						0							
December: 1-22			0						0							Oats 3-5 inches high; soil 0-2 inches dry, moderately moist below, cracks almost closed.
22	4:30 a. m.	14 23	.81	.84	.60	.38	.06		0							
22-31			.23						0							
Total			1.04						0							

TABLE 21.—Summary of rainfall and run-off from watershed 12, December 15, 1937, to December 31, 1939

LOCATION: Latitude 31°28'48'', longitude 96°52'59''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 380 feet. Area, 2.97 acres.

Shape factor.—0.896.

Slope.—22 percent of the watershed has a slope of 1 to 3 percent; 78 percent, 3 to 6 percent. Average slope is 3.81 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined and there is no evidence of serious erosion. There are seepy areas just above the upper boundary of the watershed.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Continuous native meadow.

Vegetal cover and soil condition.—The watershed was in native meadow throughout period of records.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station 70 (fig. 2). Before March 14, 1938, recording gage 69 was used. The maximum and average rainfall intensities were obtained from stations 69 or 70 and from station 70a on June 4, July 22-31, and August 10, 1938. No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gages 70 or 69.

Run-off.—Run-off was measured by type H measuring flume with flat floor and 3-foot depth (side walls extended ½-foot higher), and FW-1 water stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1- and 0.2-foot stage (0.035 and 0.12 second-foot), and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (February 16, March 28, and April 15, 1938), intake stoppage, especially on receding stages (February 16, March 28, and April 15, 1938), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 8- by 20- by 2-foot silt box.

Ground-water levels.—There were no wells to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—On November 21, 1939 one-half foot of freeboard was added to the blades and side walls of the H flume increasing the capacity from 30 to 45 second-feet.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1938, 26.07 inches; 1939, 24.32 inches. Maximum 5 minutes, 7.32 inches per hour, March 28, 1938. Maximum 15 minutes, 2.76 inches per hour, March 28, 1938. Maximum 30 minutes, 1.62 inches per hour, June 19, 1939.

Run-off.—Annual run-off amount 1938, 2.48 inches; 1939, 0 inches. Maximum rate of run-off, 0.430 inch per hour (1.29 second-feet), February 16, 1938. No flow for long periods.

TABLE 21.—Summary of rainfall and run-off from watershed 12, December 15, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off						Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss
				Maximum for—			Average rate for duration of rain			Maximum rate	Period of rise				
				5-minute period	15-minute period	30-minute period									
1937				In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
December: 1-15		Hr. min.	In.												
15			0.29						0						
			.34						0						
15-16			.10						0						
16	3:35 a. m.	1 15	.25	0.48	0.28	0.24	0.20		0						
16			.01						0						
16	6:00 a. m.	14 0	.67	.36	.28	.24	.05		0						
16-22			.05						0						
22	1:50 a. m.	5 40	.62	.48	.40	.26	.11		0						
22	8:42 a. m.	5 58	.67	.72	.48	.34	.11		0						
22-31			.61						0						
Total			3.61						0						
1938															
January: 1-5			.08						0						
5-6	3:28 p. m.	10 22	.56	.24	.12	.10	.05		0						
6-23			.86						0						
23-24	12:30 a. m.	10 23	2.45	1.68	1.00	.54	.24	1:23 a. m.	1.53	1.04	0.348				
24-31			.04						0						
Total			3.99						1.53						
February: 1-16			.20						0						
16	1:42 p. m.	2 33	1.50	4.20	2.56	1.48	.59	1:42 p. m.	.43	1.29	.430				
17-18	10:52 p. m.	2 8	.43	.48	.36	.24	.20	11:10 p. m.	.18	.296	.010	12:15 a. m.	1 5		
18-21			0						0						
21	7:13 a. m.	5 57	.58	.48	.36	.24	.10	8:30 a. m.	.15	.110	.0368				
21-28			0						0						
Total			2.71						.76						
March: 1-22			.29						0						
22	11:50 a. m.	1 3	.60	1.44	1.16	.86	.57		0						
22-27			0						0						
27	12:02 a. m.	1 58	.37	1.56	.88	.52	.19		0						
27	6:15 a. m.	2 29	.37	.96	.40	.22	.15		0						
28	3:44 p. m.	1 13	1.10	7.32	2.76	1.44	.90	3:43 p. m.	.0088	.112	.0373	3:47 p. m.	40	0.0013	
28-31			.03						0						
Total			2.76						.0088						
April: 1-7			.23						0						
7	4:22 a. m.	3 8	.45	.48	.32	.26	.14		0						
7-14			0						0						
14-15	11:50 p. m.	1 50	.62	2.16	1.12	.70	.34		0						
15			.16						0						
15	6:00 a. m.	7 23	1.51	1.12	.76	.58	.20	9:34 a. m.	.18	.272	.0907			.0535	
15-26			.38						0						
26	6:02 a. m.	56	.36	1.44	.80	.50	.38		0						
26-30			.30						0						
Total			4.01						.18						
May: 1-4			0						0						
4	12:50 a. m.	1 36	.25	.72	.36	.18	.16		0						
4-7			0						0						
7	10:35 a. m.	4 7	.36	.36	.24	.18	.09		0						
7-13			.13						0						
13	12:12 a. m.	2 28	.69	1.56	1.28	1.05	.28		0						
13-23			.11						0						
23	12:30 a. m.	1 31	.96	2.52	1.92	1.10	.63		0						
23-31			0						0						
Total			2.50						0						

TABLE 21.—Summary of rainfall and run-off from watershed 12, December 15, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off						Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1938															
June:															
1-4			0						0						
4	3:18 a. m.	4 42	.98	2.64	1.64	0.96	0.21		0					Native grass 18-24 inches high, weedy; soil moderately dry.	
4-8			0						0						
8	1:08 p. m.	1 32	.41	.72	.48	.34	.27		0					Do.	
9	2:10 a. m.	2 10	.34	.24	.20	.18	.16		0						
9-17			.36						0						
17	6:10 a. m.	1 39	.61	2.40	1.28	.92	.37		0						
17-21			0						0						
21	12:32 p. m.	28	.50	2.64	1.76	1.00	1.07		0					Do.	
21-30			0						0						
Total			3.20						0						
July:															
1-19			.27						0						
19	7:22 a. m.	2 21	.45	.60	.28	.20	.19		0					Native grass, second growth 6-9 inches high; soil dry and cracked.	
19-22			.11						0						
22	4:30 a. m.	5 40	.35	.24	.20	.20	.06		0						
22-31			.40						0						
Total			1.58						0						
August:															
1-10			.02						0						
10	2:56 p. m.	42	.71	2.16	1.64	.96	1.01		0					Native grass 6-9 inches high; soil dry and cracked.	
10-31			.01						0						
Total			.74						0						
September:															
1-11			.08						0						
11	9:21 a. m.	1 11	.83	1.92	1.72	1.24	.70		0					Native grass 9-18 inches high; soil dry and severely cracked.	
11-30			.05						0						
Total			.96						0						
October:															
1-31			.16						0						
November:															
1-30			.83						0					Nov. 3: Same as Sept. 11.	
December:															
1-22			.34						0						
22	4:55 p. m.	1 30	.90	1.68	1.28	.80	.60		0					Same as Sept. 11.	
22	7:37 p. m.	2 23	.59	1.44	.96	.68	.25		0						
22-25			.26						0						
25-26	11:00 a. m.	12 40	.54	.24	.12	.10	.04		0					Native grass 9-18 inches high; soil 0-12 inches moist, dry and severely cracked below.	
26-31			0						0						
Total			2.63						0						
1939															
January:															
1-8			.03						0						
8	2:30 p. m.	4 38	.83	1.92	1.20	1.08	.18		0					Do.	
8-11			.22						0						
11	12:26 p. m.	5 39	1.07	.84	.52	.38	.19		0						
11-12	10:20 p. m.	7 13	.88	.72	.52	.36	.12		0					Native grass 9-18 inches high; soil 0-20 inches moist, dry and cracked below.	
12-23			.45						0						
23	4:32 a. m.	4 38	.25	.45	.24	.12	.05		0						
23-31			.03						0						
Total			3.76						0						
February:															
1-17			.48						0					Feb. 17: Native grass 9-18 inches high; soil 0-36 inches moist, moderately dry below.	
17	11:40 a. m.	2 0	.36	1.56	.96	.54	.18		0						
17-19			.04						0					Native grass 9-18 inches high; soil 0-48 inches moist, moderately dry below.	
19	12:55 a. m.	5 0	.76	.60	.40	.30	.15		0						
19-25			.08						0						
25	5:20 a. m.	5 10	.99	1.68	.96	.88	.19		0						
25-28			.06						0						
Total			2.77						0						

TABLE 21.—Summary of rainfall and run-off from watershed 12, December 15, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1939															
March:															
1-25	6:58 a. m.	3 51	0.13	1.68	1.24	0.96	0.24		0						
25			.94						0						
25-31			.05						0						
Total			1.12						0						
April:															
1-30			.80						0						
May:															
1-7			0						0						
7	4:32 p. m.	58	.48	1.20	.72	.60	.50		0						
7	10:00 p. m.	45	.25	.84	.52	.44	.33		0						
7-16			.07						0						
16	4:53 a. m.	3 37	1.29	2.04	1.40	1.14	.36		0						
16			.04						0						
17	6:21 a. m.	1 23	.86	1.92	1.80	1.40	.62		0						
17			.01						0						
17	6:45 p. m.	1 40	.39	.60	.44	.36	.23		0						
18	6:51 a. m.	33	.40	2.28	1.48	.78	.73		0						
19			.08						0						
20	12:35 a. m.	1 30	.85	1.68	1.34	1.06	.57		0						
20-31			.12						0						
Total			4.84						0						
June:															
1-19			1.34						0						
19	9:19 a. m.	2 59	1.19	2.76	2.04	1.62	.40		0						
19-30			.18						0						
Total			2.71						0						
July:															
1-31			.31						0						
August:															
1-19			.47						0						
19	6:05 a. m.	1 15	.90	1.92	1.44	1.26	.72		0						
20	2:39 p. m.	3 6	.57	.96	.64	.62	.18		0						
20-23			.01						0						
23	5:30 a. m.	1 5	.26	1.68	.72	.42	.24		0						
23-31			.10						0						
Total			2.31						0						
September:															
1-29			.38						0						
29	2:30 p. m.	30	.34	1.56	1.24	.68	.68		0						
29-30			0						0						
Total			.72						0						
October:															
1-8			0						0						
8	1:20 p. m.	20	.48	2.76	1.52	.90	1.35		0						
9			.10						0						
9	8:30 p. m.	1 33	.37	.96	.60	.40	.24		0						
10	12:30 a. m.	3 13	.58	1.32	.84	.52	.18		0						
10-31			.30						0						
Total			1.83						0						
November:															
1-11			.26						0						
11	4:06 a. m.	2 39	.25	.24	.20	.18	.09		0						
11	9:25 a. m.	4 33	.64	.60	.36	.36	.14		0						
11-29			.59						0						
29-30	10:45 p. m.	11 17	.48	.36	.16	.12	.04		0						
Total			2.22						0						
December:															
1-22			0						0						
22	4:30 a. m.	8 38	.72	.60	.44	.28	.08		0						
22-31			.21						0						
Total			.93						0						

TABLE 22.—Summary of rainfall and run-off from watershed 13, March 8, 1938, to December 31, 1939

LOCATION: Latitude 31°28'41", longitude 96°52'48".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 430 feet. **Area, 3.19** acres.

Shape factor.—0.774.

Slope.—77 percent of the watershed has a slope of 1 to 3 percent; 23 percent, 3 to 6 percent. Average slope is 3.07 percent.

Soil.—Predominating soil is Houston black clay, shallow phase, over chalk, which has a depth of 12 to 36 inches; about 30 percent is Houston black clay, which has a depth of 60 inches or more. Houston black clay is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined and there is very little evidence of serious erosion. One seepy area along right side covers about 20 percent of the watershed.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—Watershed in corn during 1938, cotton during 1939. Both are planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station 70 (fig. 2). The maximum and average rainfall intensities were obtained from station 70 after March 14, 1938, from station 69 before that date, from

station 70a on June 4, July 22–31, and August 10, 1938. No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage 70.

Run-off.—Run-off was measured by type H measuring flume with flat floor and 3-foot depth (side walls extended ½-foot higher), and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1- and 0.2-foot stage (0.035 and 0.12 second-foot) and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (March 28, April 15, 1938, May 17 a. m. and May 18, 1939), intake stoppage, especially on receding stages (March 28, April 15, 1938, and May 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Nonrecording well 451 (fig. 4) was used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—On November 10, 1939, one-half foot of freeboard was added to the blades and side walls of the H flume, increasing the capacity from 30 to 45 second-feet.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 24.32 inches. Maximum 5 minutes, 7.32 inches per hour, March 28, 1938. Maximum 15 minutes, 2.76 inches per hour, March 28, 1938. Maximum 30 minutes 1.62 inches per hour, June 19, 1939.

Run-off.—Annual run-off amount, 1.33 inches, 1939. Maximum rate of run-off, 1.51 inches per hour (4.86 second-feet), May 17, 1939. No flow for long periods.

Date	Rainfall								Run-off						Remarks
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise	Silt loss	
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1938		Hr. Min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.- ft.	In. per hr.		Hr. Min.	Tons per acre	
March:															
1-22			0.29						0						
22	11:50 a. m.	1 3	.60	1.44	1.16	0.86	0.57		0						Bare land; soil moist; corn planted Mar. 15; small wet area planted Mar. 19.
22-27			0						0						
27	12:02 a. m.	1 58	.37	1.56	.88	.52	.19		0						Corn 2-3 inches high; soil moist.
27	6:15 a. m.	2 29	.37	.96	.40	.22	.15		0						
28	3:44 p. m.	1 13	1.10	7.32	2.76	1.44	.90	3:47 p. m.	.27	2.46	0.764			0.321	
28-31			.03						0						
Total			2.76						.27						
April:															
1-7			.23						0						
7	4:22 a. m.	3 8	.45	.48	.32	.26	.14		0						Corn 3-5 inches high; soil moist.
7-14			0						0						
14	11:50 p. m.	1 11	.78	2.16	1.12	.70	.66	12:00 p. m.	1.06	1.51	.47				
15	6:00 a. m.	7 48	1.51	1.12	.76	.58	.19		0						
15-17			0						0						
17	6:00 a. m.	40	.16	.36	.36	.28	.24	6:17 a. m.	.0098	.061	.019	6:37 a. m.	20	.754	Apr. 14: Corn 2-3 inches high; re- covering from freeze Apr. 8; soil moist.
17-26			.21						0						Apr. 25: Corn 3-8 inches high; soil moist.
26	6:02 a. m.	56	.36	1.44	.80	.50	.38	6:31 a. m.	.014	.138	.043	7:10 a. m.	39	.0107	
27	6:10 a. m.	2 46	.31	.96	.48	.28	.11	6:09 a. m.	.025	.0586	.018	6:17 a. m.	8		
27-30			0						0						
Total			4.01						1.11						

TABLE 22.—Summary of rainfall and run-off from watershed 13, March 8, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off						Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss
				Maximum for—			Average rate for duration of rain			Sec. ft.	In. per hr.				
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec. ft.	In. per hr.		Hr. min.	Tons per acre	
May:															
1-4			0						0						
4	12:50 a. m.	1 36	.25	0.72	0.36	0.18	0.16		0						
4-7			0						0						
7	10:35 a. m.	4 7	.36	.36	.24	.18	.09		0						
7-13			.13						0						
13	12:12 a. m.	2 28	.69	1.56	1.28	1.05	.28		0						
13-23			.11						0						
23	12:30 a. m.	1 31	.96	2.52	1.92	1.10	.63	1:47 a. m.	.026	0.326	0.101	2:07 a. m.	21	0.0367	
23-31			0						0						
Total			2.50						.026						
June:															
1-4			0						0						
4	3:18 a. m.	4 42	.98	2.64	1.64	.96	.21		0						
4-8			0						0						
8	1:08 p. m.	1 32	.41	.72	.48	.34	.27		0						
9	2:10 a. m.	2 10	.34	.24	.20	.18	.16		0						
9-17			.36						0						
17	6:10 a. m.	1 39	.61	2.40	1.28	.92	.37		0						
17-21			0						0						
21	12:32 p. m.	28	.50	2.64	1.76	1.00	1.07		0						
21-30			0						0						
Total			3.20						0						
July:															
1-19			.27						0						
19	7:22 a. m.	2 21	.45	.60	.28	.20	.19		0						
19-22			.11						0						
22	4:30 a. m.	5 40	.35	.24	.20	.20	.06		0						
22-31			.40						0						
Total			1.58						0						
August:															
1-10			.02						0						
10	2:56 p. m.	42	.71	2.16	1.64	.96	1.01		0						
10-31			.01						0						
Total			.74						0						
September:															
1-11			.08						0						
11	9:21 a. m.	1 11	.83	1.92	1.72	1.24	.70		0						
11-30			.05						0						
Total			.96						0						
October:															
1-31			.16						0						
November:															
1-30			.83						0						
December:															
1-22			.34						0						
22	4:55 p. m.	1 30	.90	1.68	1.28	.80	.60		0						
22	7:37 p. m.	2 23	.59	1.44	.96	.68	.25		0						
22-25			.26						0						
25-26	11:00 a. m.	12 40	.54	.24	.12	.10	.04		0						
26-31			0						0						
Total			2.63						0						
Corn 8-16 inches high; soil moist.															
Corn 10-20 inches high; soil moist, surface loose; cultivated May 12.															
Corn 15-57 inches high, silking; soil moist, surface loose; cultivated May 31.															
Same as June 4 except corn 24-72 inches high.															
Corn 36-72 inches high, eared; soil moist, surface loose.															
Do.															
Corn 36-72 inches high; soil moderately dry, cracks 6-12 inches deep.															
Do.															
Corn mature, dry, undergrowth of grass; soil dry, hard, cracks ½-1 inch wide, 1-2 feet deep.															
Same as Aug. 10 except cracks 1-2 inches wide, 2-3 feet deep.															
Nov. 7: Same as Sept. 11 except soil 0-2 inches moist, dry below, cracks 1-2 inches wide, 2-3 feet deep.															
Same as Nov. 7 except soil 0-3 inches dry, 3-6 inches moist, dry below, cracks 1-2 inches wide, 2-3 feet deep.															
Dec. 25: Same as Dec. 22 except soil 0-12 inches moist, cracks partly sealed, dry and cracked below.															

TABLE 22.—Summary of rainfall and run-off from watershed 13, March 8, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain			Sec.-ft.	In. per hr.				
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.			Hr. min.	Tons per acre		
1939															
January:															
1-8			0.03						0						
8	2:30 p. m.	4 38	.83	1.92	1.20	1.08	0.18		0					Bare land, bedded Jan. 5, beds 8-10-inch; soil 0-24-inch moist, loose.	
8-11			.22						0						
11	12:26 p. m.	5 37	1.07	.84	.52	.38	.19		0					Bare land, soil moist, cracks closed, beds 8-10 inches.	
11-12	10:20 p. m.	7 13	.88	.72	.52	.36	.12		0						
12-23			.45						0						
23	4:32 a. m.	4 38	.25	.45	.24	.12	.05		0						
23-31			.03						0						
Total			3.76						0						
February:															
1-17			.48						0						
17	11:40 a. m.	2 0	.36	1.56	.96	.54	.18		0					Bare land, soil 0-6 inches moderately dry, below 6 inches moist,—beds 8-10 inches.	
17-19			.04						0						
19	12:55 a. m.	5 0	.76	.60	.40	.30	.15		0						
19-25			.08						0						
25	5:20 a. m.	5 10	.99	1.68	.96	.88	.19		0					Bare land, soil moist, beds 8-10 inches.	
25-28			.06						0						
Total			2.77						0						
March:															
1-25			.13						0					Bare land, soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.	
25	6:58 a. m.	3 51	.94	1.68	1.24	.96	.24		0						
25-31			.05						0						
Total			1.12						0						
April:															
1-30			.80						0					Bare land, soil 0-6 inches moderately dry, below 6 inches moist; cotton planted Apr. 12.	
May:															
1-7			0						0						
7	4:32 p. m.	58	.48	1.20	.72	.60	.50		0					Cotton 3 inches high; soil moderately dry, cultivated May 4.	
7-16	10:00 a. m.	45	.25	.84	.52	.44	.33		0						
16	4:53 a. m.	3 37	1.29	2.04	1.40	1.14	.36	5:40 a. m.	.042	0.54	0.167	5:53 a. m.	13	2.31	
16			.04						0						
17	6:21 a. m.	1 23	.86	1.92	1.80	1.40	.62	6:25 a. m.	.50	4.86	1.51	6:39 a. m.	4		
17			.01						0						
17	6:45 p. m.	1 40	.39	.60	.44	.36	.23	7:32 p. m.	.11	.404	.126	8:05 p. m.	33		
18	6:51 p. m.	33	.40	2.28	1.48	.78	.73	6:58 a. m.	.20	2.71	.842	7:06 a. m.	8		
19			.08						0						
20	12:35 a. m.	1 30	.85	1.68	1.34	1.06	.57	12:41 a. m.	.48	3.49	1.08	1:13 a. m.	32	.859	
20-31			.12						0					Cotton 4-5 inches high, soil wet and soft.	
Total			4.84						1.33						
June:															
1-19			1.34						0					June 4: Cotton 8-10 inches high, squaring, soil moist; cultivated May 26.	
19	9:19 a. m.	2 59	1.19	2.76	2.04	1.62	.40		0					June 19: Cotton 12-14 inches high, squaring, soil 0-6 inches moderately dry, below 6 inches moist; cultivated June 12.	
19-30			.18						0						
Total			2.71						0						
July:															
1-31			.31						0					July 19: Cotton 18-20 inches high, bolling, soil dry, surface loose, cracks 1-2 feet deep; cultivated July 18.	

TABLE 22.—Summary of rainfall and run-off from watershed 13, March 8, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In. 0.47	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
August: 1-19									0						Cotton 18-20 inches high, bolling; soil dry, surface loose, cracks 1-2 feet deep.
19	6:05 a. m.	1 15	.90	1.92	1.44	1.26	0.72	0							
20	2:39 p. m.	3 6	.57	.96	.64	.62	.18	0							
20-23			.01					0							
23	5:30 a. m.	1 5	.26	1.68	.72	.42	.24	0							
23-31			.10					0							
Total			2.31					0							
September: 1-29			.38					0							Same as Aug. 1-19 except many leaves stripped by worms; all cotton open.
29	2:30 a. m.	30	.34	1.56	1.24	.68	.68	0							
29-30			0					0							
Total			.72					0							
October: 1-8			0					0							Same as Sept. 29 except picking completed.
8	1:20 p. m.	20	.48	2.76	1.52	.90	1.35	0							
9			.10					0							
9	8:30 p. m.	1 33	.37	.96	.60	.40	.24	0							Oct. 27: Oats 2-3 inches high, planted Oct. 16; soil dry, cracked, surface loose.
10	12:30 a. m.	3 13	.58	1.32	.84	.52	.18	0							
10-31			.30					0							
Total			1.83					0							
November: 1-11			.26					0							Nov. 10: Same as Oct. 27.
11	4:06 a. m.	2 39	.25	.24	.20	.18	.09	0							
11	9:25 a. m.	4 33	.64	.60	.36	.36	.14	0							
11-29			.59					0							Oats 2-4 inches high, soil 0-12 inches moist, dry and cracked below.
29-30	10:45 p. m.	11 17	.48	.36	.16	.12	.04	0							
Total			2.22					0							
December: 1-22								0							Oats 3-5 inches high, soil 0-2 inches dry, moderately moist below, cracks almost closed.
22	4:30 a. m.	8 38	0.72	.60	.44	.28	.08	0							
22-31			.21					0							
Total			.93					0							

TABLE 23.—Summary of rainfall and run-off from watershed 14, March 9, 1939, to December 31, 1939

LOCATION: Latitude 31°28'59'', longitude 96°53'27''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 375 feet. Area, 3.02 acres.

Shape factor.—0.939.

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 1.55 percent.

Soil.—Predominating soil is Houston-Hunt clay, which has a depth of 36 inches or more, about 60 percent having a depth of 60 inches or more. This soil is tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells. It is not quite as tenacious and impervious as Houston black clay, and the surface dries faster after rainfall ceases.

Erosion conditions.—One small gully near left side of watershed was nearly eliminated by grading in from adjacent areas before station was installed. There is no other evidence of serious erosion.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—During 1939 the watershed was in cotton planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station 56 (fig. 2). No nonrecording rain gages

TABLE 23.—Summary of rainfall and run-off from watershed 14, March 9, 1939, to December 31, 1939—Continued

were used. Snowfall was measured by weighing-recording rain gage 56.

Run-off.—Run-off was measured by type H measuring flume with flat floor and 3-foot depth (side walls extended ½-foot higher), and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1- and 0.2-foot stage (0.035 and 0.12 second-foot) and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 and 18, 1939), intake stoppage, especially on receding stages (May 16, 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were not obtained at this station.

Ground-water levels.—Nonrecording well 464 (fig. 4) was used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious collection gutters were covered June 30, 1939.

SUMMARY OF RECORDS:

Rainfall.—Maximum 5 minutes, 3.48 inches per hour, May 18 and June 19, 1939. Maximum 15 minutes, 2.20 inches per hour, June 19, 1939. Maximum 30 minutes, 1.58 inches per hour, June 19, 1939.

Run-off.—Maximum rate of run-off, 1.06 inches per hour (3.25 second-feet), May 18, 1939. No flow for long periods.

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
March: 1-25	8:15 a. m.	3 42	0.11	1.44	1.28	1.02	0.25		0						Bare land; soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.
25			.93						0						
25-31			.06						0						
Total			1.10						0						
April: 1-30			.74						0						Bare land; soil 0-6 inches moderately dry, below 6 inches moist; cotton planted Apr. 12. Cultivated May 4. Cotton 3 inches high; soil moderately dry.
May: 1-7			0						0						
7	4:28 p. m.	40	.63	2.40	1.00	.88	.94		0						
7-16	10:00 p. m.	40	.27	.84	.44	.40	.40		0						
16	4:53 a. m.	3 22	1.41	1.68	1.48	1.24	.42	5:34 a. m.	.29	1.94	0.635	5:43 a. m.	9		Same as May 7, except cotton 4 inches high.
16			.03						0						
17	6:23 a. m.	1 31	.75	2.40	1.64	1.14	.50	6:26 a. m.	.38	3.20	1.04	6:42 a. m.	16		
17	6:45 p. m.	1 43	.43	.60	.48	.28	.25	6:50 p. m.	.20	.825	.270				
18	6:51 a. m.	29	.34	3.48	1.32	.68	.70	6:52 a. m.	.20	3.25	1.06	6:59 a. m.	7		
19			.04						0						
20	12:36 a. m.	1 24	.81	1.80	1.32	1.00	.58	12:47 a. m.	.50	2.85	.933	1:09 a. m.	22		Cotton 4-5 inches high; soil wet and soft.
20-31			.07						0						
Total			4.87						1.57						
June: 1-4			.94						0						Cotton 8-10 inches high, squaring; soil moist; cultivated May 26.
4	11:09 p. m.	21	.28	2.52	.92	.56	.80		0						
4-19			.17						0						
19	4:37 a. m.	5 10	1.40	3.48	2.20	1.58	.27		0						Cotton 12-14 inches high, squaring; soil 0-6 inches moderately dry, below 6 inches moist; cultivated June 12.
19-30			.09						0						
Total			2.88						0						
July: 1-31			.25						0						July 19: Cotton 18-20 inches high, bolling; soil dry, surface loose, cracks 1-2 feet deep; cultivated July 18. Aug. 4: Cotton 18-20 inches high, bolling; soil dry, surface loose, cracks 1-2 feet deep. Do.
August: 1-19			.45						0						
19	6:16 p. m.	1 14	.85	2.40	1.64	1.32	.69		0						
20	2:40 p. m.	3 20	.65	2.04	1.16	.82	.20		0						
20-31			.16						0						
Total			2.11						0						

TABLE 23.—Summary of rainfall and run-off from watershed 14, March 9, 1939, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre		
September:			0						0						
1-9			.28	2.16	1.12	0.56	1.20		0						
9	3:41 p. m.	14	.12						0						
9-29			.40	1.80	1.48	.80	1.26		0						
29	2:36 p. m.	19													
29-30			0						0						
Total			.80						0						
October:			0						0						
1-8			.39	2.04	1.24	.78	1.02		0						
8	1:22 p. m.	23	.13						0						
8-9			.66	1.44	.96	.64	.53		0						
9	8:29 p. m.	1 15	.88	1.80	1.40	.74	.28		0						
10	12:30 a. m.	3 10	.25						0						
10-31									0						
Total			2.31						0						
November:			.31						0						
1-11			.27	.36	.20	.18	.13		0						
11	3:40 a. m.	2 5	.67	.60	.48	.42	.13		0						
11	9:20 a. m.	5 5	.60						0						
11-29			.41	.48	.20	.10	.03		0						
29-30	9:00 p. m.	11 7	.09						0						
30									0						
Total			2.35						0						
December:			0						0						
1-22			.50	.48	.36	.26	.10		0						
22	6:00 a. m.	4 50													
22-31			.39						0						
Total			.89						0						

TABLE 24.—Summary of rainfall and run-off from watershed 16, September 24, 1937, to December 31, 1939

LOCATION: Latitude 31°28'37'', longitude 96°53'22''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 440 feet. Area, 3.17 acres.

Shape factor.—0.711.

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 2.58 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Two small gullies and one old terrace were removed by grading when station was installed. Other drainageways are poorly defined and there is no evidence of serious erosion.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in corn during 1938, cotton during 1939. Both were planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station 69a (fig. 2). Before March 14, 1938, recording rain gage 69 was used. No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage 69 or 69a.

Run-off.—Run-off was measured by a 2-foot Parshall flume and FW-1 water-stage recorder. The records of run-off are excellent above 0.3-foot stage (1.24 second-feet), good between 0.2- and 0.3-foot stage (0.66 and 1.24 second-feet) and fair to poor below 0.2 foot, when all conditions were favorable. The presence of silt on the flume floor (December 22, 1937; January 23, February 16, March 28, April 15, 1938; and May 16, 17, 18, 20, 1939), and intake stoppage especially on receding stages on those dates, shifts in gage elevation, expansion of recorder paper, and numerous other causes of errors may reduce the general accuracy of the records. Owing to inadequate dikes on upper side of watershed, a small amount of foreign water may have entered the watershed during any of the storms in the period of record.

Soil loss.—Records of soil loss are obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Nonrecording well 440 (fig. 4) was used to indicate the fluctuation of the ground water in the vicinity of this watershed.

TABLE 24.—Summary of rainfall and run-off from watershed 16, September 24, 1937, to December 31, 1939—Continued

Changes during year.—The impervious collection gutters were covered October 6, 1939.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1938, 25.55 inches; 1939, 24.62 inches. Maximum 5 minutes, 7.20 inches per hour, March 28, 1938. Maximum 15 minutes, 2.80 inches per hour,

March 28, 1938. Maximum 30 minutes, 1.50 inches per hour, March 28, 1938.

Run-off.—Annual run-off amount 1938; 3.97 inches; 1939, 1.85 inches. Maximum rate of run-off, 1.91 inches per hour (6.10 second-feet), May 17, 1939. No flow for long periods.

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1937															
October: 1-9			0						0						Bare land; soil dry, loose, cloddy; oat stubble plowed Sept. 22. Do.
9	7:20 a. m.	2 15	.32	0.84	0.36	0.30	0.14		0						
9-13			0						0						
13	5:25 a. m.	8 15	1.47	.72	.60	.52	.18		0						
13-16			.12						0						Bare land; soil 0-6 inches moist, subsurface dry and cracked.
16	1:00 p. m.	1 6	.30	.96	.52	.32	.27		0						
17	2:05 a. m.	3 43	.25	.24	.16	.12	.07		0						
17	7:10 a. m.	1 52	.52	1.44	.96	.48	.28		0						
17-31			0						0						
Total			2.98						0						
November: 1-9			.34						0						Bare land; scattered Johnson grass; soil 0-12 inches moist, subsurface dry and cracked.
9	12:04 a. m.	7 35	2.44	3.24	2.04	1.42	.32		0						
9-22			.10						0						
22	8:50 a. m.	10 50	1.32	.12	.08	.08	.03		0						
22-30			0						0						Bare land; scattered Johnson grass soil moist.
Total			3.20						0						
December: 1-16			.73						0						Thin stand volunteer oats 1-3 inches high; soil wet.
16	3:35 a. m.	3 25	.28	.48	.32	.24	.07		0						
16	8:00 a. m.	9 20	.65	.36	.28	.26	.07		0						
16-22			.05						0						
22	1:50 a. m.	11 34	1.42	.72	.48	.34	.12	2:15 a. m.	.22	0.130	0.0407				
22-31			.48						0						
Total			3.61						.22						
1938															
January: 1-5			0						0						Do.
5-6	2:30 p. m.	11 20	.62	.24	.12	.10	.05		0						
6-23			.92						0						
23-24	12:30 a. m.	13 29	2.65	1.68	1.00	.54	.20	12:30 a. m.	1.66	.680	.213				
24-31			0						0						Thin stand volunteer oats 4-5 inches high; soil wet.
Total			4.19						1.66						
February: 1-16			.19						0						Bare land; soil 0-6 inches moist, subsurface wet; bedded Feb. 8, beds 8-10 inches.
16-17	1:42 p. m.	2 33	1.51	4.20	2.56	1.48	.59	2:29 p. m.	.032	.022	.0069	2:30 p. m.	1		
17-21	10:50 p. m.	2 5	.44	.60	.44	.32	.21	10:52 p. m.	.468	.031	.0098	10:54 p. m.	2		
21	7:00 a. m.	5 59	.57	.48	.32	.28	.10	7:00 a. m.	.078	.046	.0144	7:30 a. m.			
21-28			0						0						
Total			2.71						.578						
March: 1-22			.29						0						Bare land; soil moist; corn planted Mar. 17.
22	11:50 a. m.	1 15	.55	1.56	1.12	.86	.44		0						
22-27			0						0						
27	12:02 a. m.	1 43	.37	1.44	.96	.52	.22		0						
27	4:00 a. m.	4 0	.28	.48	.24	.14	.07		0						
27-28			.03						0						
28	3:43 p. m.	1 4	1.10	7.20	2.80	1.50	1.03	3:46 p. m.	.20	2.69	.842				
28-31			.02						0						Corn 2-3 inches high; soil wet.
Total			2.64						.20						

¹ Snow.

TABLE 24.—Summary of rainfall and run-off from watershed 16, September 24, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain			Sec.-ft.	In. per hr.				
				5-minute period	15-minute period	30-minute period									
1938															
April:		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In. 0				Hr. min.	Tons per acre	
1-6			0.02												
6-7	10:01 p. m.	28	.25	0.96	0.56	0.30	0.54	10:10 p. m.	.011	0.0519	0.0162	10:45 p. m.	35	0.0104	
7	4:17 a. m.	3 16	.49	.48	.36	.24	.15	4:20 a. m.	.100	.0777	.0242	4:45 a. m.	25		
7-14			0						0						
14-16	11:50 p. m.	13 0	2.11	1.80	.96	.64	.16	11:53 p. m.	1.380	1.29	.404				
16-17			0						0						
17	6:00 a. m.	45	.13	.24	.16	.14	.17	6:05 a. m.	.014	.155	.0485	6:40 a. m.	35		
17-25			.17						0						
25	1:40 p. m.	10	.30	2.88	1.20	.60	1.80		0						
26	6:02 a. m.	44	.19	.60	.28	.18	.26	6:10 a. m.	.018	.0350	.0110	7:40 a. m.	1 30	.0111	
27	6:08 a. m.	3 47	.26	.60	.28	.16	.07		0						
27-30			0						0						
Total			3.92						1.523						
May:															
1-7			.23						0						
7	10:34 a. m.	3 41	.38	.24	.20	.16	.10		.01						
7-13			.12						0						
13	12:13 a. m.	2 22	.68	1.44	1.24	.72	.29		0						
13-23			.10						0						
23	12:30 a. m.	1 24	.89	2.52	1.76	1.04	.64		0						
23-31			0						0						
Total			2.40						.01						
June:															
1-4			0						0						
4	3:20 a. m.	2 51	.86	2.40	1.36	.76	.32		0						
4-8			.02						0						
8	1:08 a. m.	1 14	.43	.72	.48	.32	.19		0						
9	2:10 a. m.	2 20	.32	.24	.20	.18	.14		0						
9-17			.41						0						
17	6:08 a. m.	2 7	.39	.72	.68	.56	.18		0						
17-21			0						0						
21	12:35 p. m.	35	.42	1.80	1.36	.82	.72		0						
21-30			0						0						
Total			2.85						0						
July:															
1-9			0						0						
9	5:02 p. m.	28	.70	2.76	1.96	1.28	1.50		0						
9-19			.03						0						
19	7:06 a. m.	2 49	.52	.60	.44	.32	.18		0						
19-22			.16						0						
22	7:00 a. m.	3 35	.29	.36	.28	.24	.08		0						
23	9:00 a. m.	2 30	.27	.24	.20	.18	.11		0						
23-31			.07						0						
Total			2.04						0						
August:															
1-10			.06						0						
10	2:56 p. m.	29	.26	1.32	.68	.34	.54		0						
10-31			0						0						
Total			.32						0						
September:															
1-11			.05						0						
11	9:21 a. m.	1 22	.66	1.80	1.60	1.00	.49		0						
11-30			.03						0						
Total			.74						0						

TABLE 24—Summary of rainfall and run-off from watershed 16, September 24, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain			Maximum rate					
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In. 0.13	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In. 0	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1938															
October: 1-31			0.13						0						
November: 1-30			.97						0						Nov. 7; Same as Sept. 11 except soil 0-2 inches moist, dry below, cracks 1-2 inches wide, 2-3 feet deep.
December: 1-22			.31						0						Dec. 22: Same as Nov. 7 except soil 0-3 inches dry, 3-6 inches moist, dry below, cracks 1-2 inches wide, 2-3 feet deep.
22	4:20 p. m.	4 30	1.47	2.52	1.20	0.88	0.33		0						
22-25			.27						0						
25-26	10:30 a. m.	12 25	.59	.36	.20	.14	.05		0						Same as Dec. 22 except soil 0-12 inches moist, cracks partly sealed, dry and cracked below.
26-31			0						0						
Total			2.64						0						
1939															
January: 1-8			.05						0						
8	5:10 p. m.	2 0	.88	1.80	1.28	1.04	.44		0						Bare land, bedded Jan. 5, beds 8-10 inches; soil 0-24 inches moist, loose.
8-11			.24						0						
11-12	10:00 a. m.	13 45	1.92	.72	.48	.38	.14		0						Bare land, soil moist, cracks closed; beds 8-10 inches.
12-31			.72						0						
Total			3.81						0						
February: 1-17			.49						0						
17	11:20 a. m.	1 25	.42	2.52	1.28	.68	.30		0						Bare land, soil 0-6 inches moderately dry, below 6 inches moist, beds 8-10 inches.
17-19			.07						0						
19	2:00 a. m.	5 12	.77	.60	.40	.32	.15		0						
19-25			.09						0						
25	5:26 a. m.	4 14	.97	1.80	.92	.82	.26		0						Bare land, soil moist, beds 8-10 inches.
25-28			.05						0						
Total			2.86						0						
March: 1-25			.13						0						
25	8:16 a. m.	3 31	.92	1.68	1.32	1.04	.26		0						Bare land, soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.
25-31			.07						0						
Total			1.12						0						
April: 1-30			.83						0						
May: 1-7			0						0						
7	4:30 p. m.	34	.49	1.92	1.00	.68	.86		0						Cultivated May 4. Cotton 3 inches high; soil moderately dry.
7-16	10:02 p. m.	43	.29	.96	.60	.48	.40		0						
16	4:53 a. m.	3 7	1.27	1.92	1.40	1.20	.09	4:54 a. m.	.16	1.07	0.335				
16			.05						0						
17	6:21 a. m.	2 49	.85	3.24	2.04	1.36	.25	6:25 a. m.	.50	6.10	1.91	6:40 a. m.	15	2.05	May 16: Same as May 7 except cotton 4 inches high.
17-18	6:40 p. m.	2 0	.41	.84	.52	.42	.20	6:40 p. m.	.30	.76	.238				
18	6:52 a. m.	26	.35	3.24	1.36	.70	.81	6:52 a. m.	.24	3.75	1.17	7:00 a. m.	8		
19			.08						0						
20	12:36 a. m.	1 26	.89	1.56	1.32	1.10	.62	12:38 a. m.	.65	3.40	1.06			.977	Cotton 4-5 inches high; soil wet and soft. Cultivated May 26.
20-31			.02						0						
Total			4.77						1.85						

TABLE 24.—Summary of rainfall and run-off from watershed 16, September 24, 1937, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1939															
June:															
1-4			0.32						0						
4	4:40 a. m.	3 54	.43	0.84	0.60	0.42	0.11		0					Cotton 8-10 inches high, squaring; soil moist.	
4-19			.72						0						
19	9:18 a. m.	3 23	1.12	2.64	1.92	1.44	.33		0					Cotton 12-14 inches high, squaring; soil 0-6 inches moderately dry, below 6 inches moist, cultivated June 12.	
19-30			.13						0						
Total			2.72						0						
July:															
1-31			.29						0					July 19: Cotton 18-20 inches high, bolling; soil dry, surface loose, cracks 1-2 feet deep; cultivated July 18.	
August:															
1-19			.48						0					Aug. 4: Cotton 18-20 inches high, bolling; soil dry, surface loose, cracks 1-2 feet deep.	
19	6:16 p. m.	1 14	.82	2.16	1.40	1.28	.56		0					Do.	
20	2:41 p. m.	2 49	.66	1.20	1.04	.82	.23		0						
20-31			.22						0						
Total			2.18						0						
September:															
1-29			.42						0						
29	2:36 p. m.	19	.28	1.56	1.08	.56	.88		0					Same as Aug. 4 except many leaves stripped by worms; all cotton open.	
29-30			0						0						
Total			.70						0						
October:															
1-8			0						0						
8	1:20 p. m.	20	.39	2.16	1.24	.76	1.17		0						
8-9			.10						0						
9	8:27 p. m.	1 21	.61	1.08	.68	.36	.45		0						
10	12:28 a. m.	2 58	.64	.96	.68	.36	.22		0					Same as Sept. 29 except picking completed.	
10-31			.32						0					Oct. 27: Oats 2-3 inches high, planted Oct. 16; soil dry, cracked, surface loose.	
Total			2.06						0						
November:															
1-11			.28						0					Nov. 10: Same as Oct. 27.	
11	4:00 a. m.	3 5	.27	.36	.24	.20	.09		0						
11	9:30 a. m.	4 3	.69	.48	.40	.38	.17		0						
11-29			.60						0						
29-30	9:30 p. m.	12 47	.50	.48	.20	.10	.04		0					Oats 2-4 inches high; soil 0-12 inch moist, dry and cracked below.	
Total			2.34						0						
December:															
1-22			0						0						
22	4:30 a. m.	11 10	.72	.60	.44	.28	.06		0					Oats 3-5 inches high; soil 0.2 inch dry, moderately moist below, cracks almost closed.	
22-31			.22						0						
Total			.94						0						

TABLE 25.—Summary of rainfall and run-off from watershed 17, February 6, 1939, to December 31, 1939

LOCATION: Latitude 31°27'45'', longitude 96°53'14''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 380 feet. Area, 2.99 acres.

Shape factor.—0.903.

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 1.82 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 36 inches or more, about 70 percent having a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined and there is no evidence of serious erosion. There are a few rather inactive seepy areas in the lower part of the watershed.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in cotton during 1939, planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station W-2 (fig. 2). No nonrecording rain

gages were used. Snowfall was measured by weighing-recording rain gage W-2.

Run-off.—Run-off was measured by type H measuring flume of 3-foot depth (side walls extended ½-foot higher), and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1 and 0.2-foot stage (0.035 and 0.12 second-foot), and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 p. m., and May 18, 1939), intake stoppage, especially on receding stages (May 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Recording well 656 (fig. 4) was used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious collection gutters were covered August 31, 1939, and the flat flume floor was replaced by a standard sloping floor August 29, 1939.

SUMMARY OF RECORDS:

Rainfall.—Maximum 5 minutes, 2.64 inches per hour, June 19, 1939. Maximum 15 minutes, 2.16 inches per hour, June 19, 1939. Maximum 30 minutes, 1.46 inches per hour, June 19, 1939.

Run-off.—Maximum rate of run-off, 0.825 inch per hour (2.49 second-feet), May 18, 1939. No flow for long periods.

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939				In. per hr.	In. per hr.	In. per hr.	In. per hr.								
February:		Hr. min.	In.						In.	Sec.- ft.	In. per hr.		Hr. min.	Tons per acre	
1-17			0.42						0						
17	11:15 a. m.	3 25	.47	2.16	1.28	0.68	0.14		0						
17-18			0						0						
18-19	11:15 p. m.	5 59	.76	.60	.40	.32	.13		0						
19-25			.07						0						
25	5:27 a. m.	4 38	1.06	1.68	1.20	.96	.23		0						
25-28			.06						0						
Total			2.84						0						
March:															
1-25			.14						0						
25	6:57 a. m.	3 12	1.19	1.68	1.48	1.26	.37		0						
25-31			.11						0						
Total			1.44						0						
April:															
1-16			.27						0						
16	4:43 a. m.	1 7	.26	.72	.48	.24	.23		0						
16-26			.09						0						
26	6:02 a. m.	48	.36	2.16	.92	.68	.45		0						
26-30			.06						0						
Total			1.04						0						

TABLE 25.—Summary of rainfall and run-off from watershed 17, February 6, 1939, to December 31, 1939—Continued

Date	Rainfall							Run-off						Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of ice		Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939				In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.- ft.	In. per hr.		Peri- od of ice	Tons per acre	
May:		Hr. min.	In.												
1-7			0.22						0						
7	10:02 p. m.	58	.38	1.44	0.64	0.60	0.39		0						Cultivated May 4. Cotton 3 inches high; soil moder- ately dry.
7-16			.08						0						
16	4:58 a. m.	3 17	1.21	2.52	1.80	1.22	.37		0						Same as May 7, except cotton inches high.
16-17			.09						0						
17	6:22 a. m.	1 8	.98	1.68	1.52	1.22	.86	6:32 a. m.	.21	1.53	0.506	6:44 a. m.	12	0.617	
17	6:30 a. m.	2 0	.44	.60	.48	.40	.22	7:35 p. m.	.094	.390	.129	8:20 p. m.	45		
18	6:46 a. m.	14	.38	2.04			1.63	6:53 a. m.	.18	2.49	.825	6:59 a. m.	6		
18-20			.04						0						
20	12:38 a. m.	1 29	.89	1.68	1.24	1.10	.60	1:03 a. m.	.50	2.02	.670	1:25 a. m.	22	.478	Cotton 4-5 inches high; soil wet and soft.
20-31			.02						0						
Total			4.73						.98						
June:															
1-4			.21						0						
4	4:48 a. m.	37	.42	2.28	1.16	.84	.68		0						Cotton 8-10 inches high, squaring; soil moist; cultivated May 26.
4			.03						0						
4	8:17 a. m.	23	.25	1.08	.76	.48	.54		0						
4-19			.33						0						
19	4:30 a. m.	4 51	1.23	2.64	2.16	1.46	.25		0						Cotton 12-14 inches high, squaring; soil 0-6 inches moderately dry, below 6 inches moist; cultivated June 12.
19-30			.19						0						
Total			2.66						0						
July:															
1-31			.27						0						July 19: Cotton 18-20 inches high, bolting; soil dry, surface loose, cracks 1-2 feet deep; cultivated July 18.
August:															
1-4			.03						0						
4	7:05 a. m.	4 23	.33	.48	.32	.22	.08		0						Cotton 18-20 inches high, bolting; soil dry, surface loose; cracks 1-2 feet deep.
4-19			.42						0						
19	6:16 p. m.	1 14	.52	1.44	.92	.68	.42		0						
19-20			0						0						Do.
20	2:45 p. m.	3 0	.72	1.68	1.44	1.06	.24		0						
20-31			.20						0						
Total			2.22						0						
September:															
1-30			.25						0						Sept. 29: Same as Aug. 4, except many leaves stripped by worms; all cotton open.
October:															
1-8			0						0						
8	1:18 p. m.	22	.36	1.40	1.04	.68	.98		0						
9			.08						0						Same as Sept. 29, except picking completed.
9	8:30 p. m.	1 37	.40	.96	.40	.38	.26		0						
10	12:20 a. m.	2 55	.64	1.32	1.12	.68	.22		0						
10-27			.06						0						Oct. 16: Oats planted.
27	12:40 p. m.	25	.28	1.56	.88	.52	.67		0						Oats 2-3 inches high; soil dry, cracked, surface loose.
27-31			0						0						
Total			1.82						0						
November:															
1-11			.26						0						Nov. 10: Same as Oct. 27.
11	4:00 a. m.	2 45	.26	.36	.24	.18	.09		0						
11	10:30 a. m.	5 6	.70	.48	.40	.36	.14		0						
11-29			.54						0						
29-30	10:30 p. m.	8 30	.34	.48	.24	.14	.04		0						Oats 2-4 inches high; soil 0-12 inches moist, dry and cracked below.
30			.17						0						
Total			2.27						0						
December:															
1-22			0						0						
22	4:30 a. m.	7 37	.69	1.20	.76	.46	.09		0						Oats 3-5 inches high; soil 0-2 inches dry, moderately moist below; cracks almost closed.
22-31			.41						0						
Total			1.10						0						

TABLE 26.—Summary of rainfall and run-off from watershed 18, April 2, 1938, to December 31, 1939

LOCATION: Latitude 31°28'04'', longitude 96°53'07''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 460 feet. Area, 3.04 acres.

Shape factor.—0.627.

Slope.—72 percent of the watershed has a slope of less than 1 percent; 28 percent, 1 to 3 percent. Average slope is 1.14 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—Drainageways are poorly defined and there is no evidence of serious erosion.

Special features.—The watershed is artificially diked on three sides, with concrete collection gutters along lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The watershed was in corn during 1938, cotton during 1939. Both were planted in 3-foot straight rows running approximately at right angles to the central axis of the watershed.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station 82 (fig. 2). No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage 82.

Run-off.—Run-off was measured by H-3 flume with flat floor and 3½-foot side walls, and FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.12 second-foot), good between 0.1 and 0.2-foot stage (0.035 and 0.12 second-foot), and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 p. m. and May 18, 1939), intake stoppage, especially on receding stages April 15, 1938; May 17, 18, and 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of some of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 8- by 40- by 2-foot silt box.

Ground-water levels.—Recording wells 661 and TW-10, and nonrecording well 662 (fig. 4) were used to indicate the fluctuation of the ground water in the vicinity of this watershed.

Changes during year.—The impervious collection gutters were covered December 12, 1939, and one-half foot of freeboard was added to the blades and side walls of the H-3 flume on October 23, 1939, increasing the capacity from 30 to 45 second-feet.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 24.81 inches. Maximum 5 minutes, 3.96 inches per hour, June 21, 1938. Maximum 15 minutes, 2.48 inches per hour, June 21, 1938. Maximum 30 minutes, 1.86 inches per hour, July 9, 1938.

Run-off.—Annual run-off amount, 0.81 inch, 1939. Maximum rate of run-off, 0.506 inch per hour (1.55 second-feet), May 20, 1939. No flow for long periods.

Date	Rainfall								Run-off						Remarks
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maxi- mum rate	Period of rise	Silt loss	
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1938				In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.- ft.	In. per hr.		Hr. min.	Tons per acre	
April: 1-7		Hr. min.	In.						In.						
7	4:18 a. m.	3 9	0.18 .52	0.48	0.32	0.24	0.16		0						
7-14			0						0						
14-15	11:52 p. m.	1 50	.58	1.80	.96	.52	.32		0						
15			.14						0						
15	8:40 a. m.	5 22	1.56	1.32	1.04	1.02	.29	9:42 a. m.	.52	0.862	0.281			0.218	
15-26			.47						0						
26	6:00 a. m.	58	.29	1.20	.64	.38	.30		0						
26-30			.25						0						
Total			3.99						.52						
May: 1-7			.26						0						
7	10:32 a. m.	4 18	.38	.24	.20	.18	.09		0						
7-13			.12						0						
13	12:15 a. m.	2 20	.67	1.80	1.24	.72	.29		0						
13-23			.10						0						
23	12:30 a. m.	2 20	.88	2.16	1.68	.90	.38		0						
23-31			0						0						
Total			2.41						0						
Corn 3-5 inches high; soil moist, surface loose; cultivated Apr. 6.															
Corn 2-3 inches high, recovering from freeze Apr. 8: Soil moist.															
Apr. 25: Corn 8-10 inches high; soil moist.															
May 4: Corn 10-16 inches high; soil moist.															
Corn 12-20 inches high; soil moist; cultivated May 6.															
Corn 12-24 inches high; soil moist.															
Corn 18-30 inches high; soil moist.															

TABLE 26.—Summary of rainfall and run-off from watershed 18, April 2, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain			Sec.-ft.	In. per hr.				
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.			Hr. min.	Tons per acre		
1938															
June:															
1-4	3:20 a. m.	4 19	0	.94	2.52	1.40	0.82	0.22	0					Corn 21-51 inches high, silking; soil moist, surface loose; cultivated May 27.	
4															
4-8									0						
8	1:10 p. m.	1 13		.36	.60	.48	.42	.30	0					Corn 36-72 inches high, silking; soil moist.	
9	2:10 a. m.	2 20		.36	.24	.24	.22	.15	0						
9-17				.39					0						
17	6:10 a. m.	2 5		.39	.72	.60	.56	.19	0					Corn 36-72 inches high, eared; soil moist.	
17-21				0					0						
21	12:36 p. m.	24		.72	3.96	2.48	1.44	1.80	0					Do.	
21-30				0					0						
Total				3.16					0						
July:															
1-9				0					0						
9	4:58 p. m.	32		.97	3.48	2.44	1.86	1.82	0					Corn 36-72 inches high, eared; soil moderately dry, cracks 6-12 inches deep.	
9-19				.03					0						
19	7:10 a. m.	3 50		.57	.84	.72	.48	.15	0					Do.	
19-22				.21					0						
22	4:10 a. m.	6 24		.32	.24	.24	.16	.05	0					Do.	
22-31				.37					0						
Total				2.47					0						
August:															
1-10				.10					0						
10	2:54 p. m.	37		.75	2.64	1.64	.86	1.22	0					Corn mature, dry, undergrowth of grass; soil dry, hard, cracks ½-1 inch wide, 1-2 feet deep.	
10-31				0					0						
Total				.85					0						
September:															
1-11				.06					0						
11	9:21 a. m.	1 39		.75	2.16	1.80	1.12	.45	0					Same as Aug. 10 except cracks 1-2 inches wide, 2-3 feet deep.	
11-30				.04					0						
Total				.85					0						
October:															
1-31				.16					0						
November:															
1-30				.83					0					Nov. 7, same as Sept. 11 except soil 0-2 inches moist, dry below, cracks 1-2 inches wide, 2-3 feet deep.	
December:															
1-22				.21					0						
22	2:16 p. m.	2 49		1.04	1.08	1.08	.78	.37	0					Same as Nov. 7 except soil 0-3 inches dry, 3-6 inches moist, dry below, cracks 1-2 inches wide, 2-3 feet deep.	
22	7:20 p. m.	2 56		.68	.84	.80	.64	.23	0						
22-25				.25					0						
25	10:00 a. m.	11 35		.54	.24	.16	.12	.05	0					Same as Dec. 22 except soil 0-12 inches moist, cracks partly sealed, dry and cracked below.	
25-31				.04					0						
Total				2.76					0						
1939															
January:															
1-8				.06					0						
8	5:00 p. m.	2 18		.87	1.68	1.28	1.08	.38	0					Bare land; bedded Jan. 5, beds 8-10 inches high; soil 0-24 inches moist, loose.	
8-11				.25					0					Bare land; soil moist, cracks closed; beds 8-10 inches.	
11	12:30 p. m.	6 50		1.16	1.20	.68	.44	.17	0						
11-12	10:30 p. m.	8 27		.96	.84	.44	.40	.11	0						
12-23				.46					0						
23	4:30 a. m.	4 38		.25	.36	.20	.12	.05	0						
23-31				.04					0						
Total				4.05					0						

TABLE 26.—Summary of rainfall and run-off from watershed 18, April 2, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off							Remarks
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise	Silt loss	
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1939															
February:															
1-17			0.49						0						
17	10:56 a. m.	3 16	.48	2.04	1.20	0.70	0.15		0						Bare land; soil 0-6 inches moderately dry, below 6 inches moist; beds 8-10 inches.
17-19			.02						0						
19	1:00 a. m.	5 53	.76	.48	.36	.30	.13		0						
19-25			.07						0						
25	5:24 a. m.	3 41	1.03	1.20	1.04	.80	.28		0						Bare land; soil moist; beds 8-10 inches.
25-28			.06						0						
Total			2.91						0						
March:															
1-25			.25						0						
25	6:58 a. m.	5 17	1.09	1.56	1.32	1.04	.21		0						Bare land; soil 0-6 inches moderately dry, below 6 inches moist; harrowed and cultivated Mar. 2.
25-31			.07						0						
Total			1.41						0						
April:															
1-16			.31						0						Cotton planted Apr. 12.
16	4:43 a. m.	1 7	.25	.48	.40	.34	.22		0						
16-30			.35						0						Apr. 25: Bare land; soil 0-6 inches moderately dry, below 6 inches moist.
Total			.91						0						
May:															
1-7			0						0						
7	4:33 p. m.	32	.30	.96	.56	.46	.56		0						Cultivated May 4. Cotton 3 inches high; soil moderately dry.
7-16			.36	.84	.60	.58	.45		0						
16	10:02 p. m.	48	.07						0						
16	4:55 a. m.	3 20	1.20	2.28	1.56	1.12	.36		0						Same as May 7 except cotton 4 inches high.
16			.09						0						
17	6:23 a. m.	2 2	.97	3.24	2.24	1.72	.48	6:35 a. m.	.16	0.829	0.270	6:58 a. m.	23	} 0.331	
17	6:45 p. m.	1 55	.42	.60	.52	.40	.22	7:52 p. m.	.060	.228	0.742	8:25 p. m.	33		
18	6:50 a. m.	19	.42	3.24	1.56	.80	1.33	6:55 a. m.	.20	1.31	.427	7:07 a. m.	12		
19			.80						0						
20	12:38 a. m.	1 37	.89	1.56	1.28	1.06	.55	1:05 a. m.	.39	1.55	.506	1:34 a. m.	29	.171	Cotton 4-5 inches high; soil wet and soft.
20-31			.01						0						
Total			4.81						.81						
June:															
1-4			.48						0						
4	6:40 a. m.	1 7	.32	1.08	.72	.48	.29		0						Cultivated May 26. Cotton 8-10 inches high, squaring; soil moist.
4-19			.51						0						Cultivated June 12.
19	9:17 a. m.	1 31	1.02	1.92	1.72	1.44	.67		0						Cotton 12-14 inches high, squaring; soil 0-6 inches moderately dry, below 6 inches moist.
19-30			.33						0						
Total			2.66						0						
July:															
1-31			.38						0						July 19: Cotton 18-20 inches high, high, bolling; soil dry, surface loose, cracks 1-2 inches deep; cultivated July 18.
August:															
1-4			.03						0						
4	6:50 a. m.	3 50	.40	.48	.36	.28	.10		0						Cotton 18-20 inches high, bolling soil dry, surface loose, cracks; 1-2 inches deep.
4-19			.10						0						
19	6:13 p. m.	1 17	.83	2.28	1.56	1.12	.65		0						
20	2:44 p. m.	3 16	.68	1.44	1.12	.90	.20		0						
20-31			.19						0						
Total			2.23						0						

TABLE 26.—Summary of rainfall and run-off from watershed 18, April 2, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain			Sec.-ft.	In. per hr.				
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In. 0.30	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In. 0				Hr. min.	Tons per acre	
1939															
September: 1-30															Sept. 29: Same as Aug. 4 except many leaves stripped by worms; all cotton open.
October: 1-8			0						0						
8	1:18 p. m.	22	.36	1.92	1.16	0.70	0.98		0						
9			.06						0						Same as Sept. 29 except picking completed.
9	8:28 p. m.	1 22	.38	.84	.52	.38	.28		0						
10	12:35 a. m.	3 5	.65	1.44	1.12	.68	.21		0						
10-31			.33						0						Oct. 27: Oats 2-3 inches high; planted Oct. 16; soil dry, cracked, surface loose.
Total			1.80						0						
November: 1-11			.28						0						
11	4:00 a. m.	3 30	.25	.24	.24	.18	.07		0						Nov. 10: Same as Oct. 27.
11	9:00 a. m.	6 0	.65	.36	.36	.34	.11		0						
11-29			.52						0						
29-30	2:30 p. m.	16 53	.61	.24	.16	.12	.04		0						Oats 2-4 inches high; soil 0-12 inches moist, dry and cracked below.
Total			2.31						0						
December: 1-22			0						0						
22	4:30 a. m.	14 23	.81	.84	.60	.38	.06		0						Oats 3-5 inches high; soil 0-2 inches dry, moderately moist below, cracks almost closed.
22-31			.23						0						
Total			1.04						0						

TABLE 27.—Summary of rainfall and run-off from plot 1, June 8, 1938, to December 31, 1939

LOCATION: Latitude 31°27'25'', longitude 96°52'35''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 168 feet. Area, 0.243 acre.

Shape factor.—0.375.

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 2.82 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. It is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks which take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—There are no defined drainageways, the area being almost a plane sloping surface. There is no evidence of serious erosion.

Special features.—The plot is artificially diked on three sides, and has concrete collection gutters along the lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, and cotton), prevailing practices.

Vegetal cover and soil condition.—The area was in oats stubble when the station was installed in 1938. During 1939, it was in cotton, planted in 3-foot straight rows running parallel to the lower boundary.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station W-9 (fig. 2). Rainfall for February 25,

1939, was measured in gage W-4. No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage W-9.

Run-off.—Run-off was measured by an H-1 flume with flat floor and an FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.057 second-foot), good between 0.1- and 0.2-foot stage (0.015 and 0.057 second-foot), and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 and 18, 1939), intake stoppage, especially on receding stages (May 17, 18, 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 5- by 16- by 1½-foot silt box.

Ground-water levels.—There were no wells to indicate the fluctuations of the ground water in the vicinity of this plot.

Changes during the period.—The concrete collection gutters were covered December 20, 1939.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation, 1939, 24.24 inches. Maximum 5 minutes, 4.92 inches per hour, June 21, 1938. Maximum 15 minutes, 4.16 inches per hour, June 21, 1938. Maximum 30 minutes, 2.20 inches per hour, June 21, 1938.

Run-off.—Annual run-off amount, 1939, 0.883 inch. Maximum rate of run-off, 1.54 inches per hour (0.377 second-foot), June 21, 1938. No flow for long periods.

TABLE 27.—Summary of rainfall and run-off from plot 1, June 8, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1938			0						0						
June: 1-4	3:18 a. m.	3 12	.92	1.08	0.80	0.56	0.29		0						
4			.24						0						
4-9			.38	.48	.32	.24	.18		0						
9	2:22 a. m.	2 8	.14						0						
9-17			.72	2.04	1.48	1.24	.36		0						
17	6:00 a. m.	2 0	.01						0						
17-21			.10						0						
21	12:27 p. m.	33	1.10	4.92	4.16	2.20	2.00	12:35 p. m.	.26	0.377	1.54	12:52 p. m.	17		
21-30			0						0						
Total			3.51						.26						
July:			0						0						
1-9			.50	3.00	1.56	1.00	1.43		0						
9	4:49 p. m.	21	.02						0						
9-19			.46	.36	.24	.20	.13		0						
19	7:00 a. m.	3 30	.28						0						
19-22			.40	.48	.24	.18	.08		0						
22	4:30 a. m.	5 19	.28						0						
22-31									0						
Total			1.92						0						
August:			.12						0						
1-10			1.03	2.52	2.04	1.42	1.24		0						
10	2:55 p. m.	50	0						0						
10-31									0						
Total			1.15						0						
September:			.10						0						
1-11			.92	2.52	1.96	1.40	.70		0						
11	9:18 a. m.	1 19	0						0						
11-30									0						
Total			1.12						0						
October:			.15						0						
1-31									0						
November:			0						0						
1-3			.43	.72	.48	.28	.18		0						
3	8:20 a. m.	2 26	.23						0						
3-30									0						
Total			.66						0						
December:			.31						0						
1-22			1.52	1.08	.84	.70	.35		0						
22	3:16 p. m.	4 18	.23						0						
22-25			.62	.24	.16	.10	.05		0						
25-26	10:00 a. m.	13 20							0						
26-31			.05						0						
Total			2.73						0						
1939															
January:			.02						0						
1-8			.90	2.04	1.32	1.18	.51		0						
8	5:30 p. m.	1 45	.26						0						
8-11			1.03	.72	.60	.36	.13		0						
11	11:00 a. m.	7 58	.94	.84	.48	.36	.12		0						
11-12	10:00 p. m.	7 34	.39						0						
12-23			.27	.36	.20	.12	.12		0						
23	4:23 a. m.	2 11	.06						0						
23-31									0						
Total			3.87						0						
February:			.12						0						
1-9			.26	2.64	1.44	.52	1.42		0						
9	7:39 p. m.	11	.16						0						
9-17			.42	1.32	.88	.52	.19		0						
17	10:36 a. m.	2 13							0						
17-19			.03						0						
19	2:42 a. m.	3 30	.77	.84	.48	.30	.22		0						
19-25			.07						0						
25	5:27 a. m.	4 33	1.03	1.56	1.00	.84	.23		0						
25-28			.05						0						
Total			2.91						0						

TABLE 27.—Summary of rainfall and run-off from plot 1, June 8, 1938, to December 31, 1939—Continued

Date	Rainfall								Run-off						Silt loss	Remarks
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise			
				Maximum for—			Average rate for duration of rain									
				5-minute period	15-minute period	30-minute period										
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre		
1939																
March:																
1-25	8:20 a. m.	5 10	0.11	2.04	1.60	1.20	0.20		0							
25			1.05						0							
25-31			.02						0							
Total			1.18						0							
April:																
1-5			0						0							
5	2:22 a. m.	49	.25	1.08	.60	.50	.47		0							
5-16			.16						0							
16	4:42 a. m.	1 8	.28	.84	.48	.32	.25		0							
16-26			.09						0							
26	5:58 a. m.	1 2	.40	1.56	1.12	.72	.39		0							
26-30			.09						0							
Total			1.27						0							
May:																
1-7			.19						0							
7	10:05 p. m.	2 0	.36	1.20	.88	.64	.18		0							
7-16			.11						0							
16	4:58 a. m.	3 17	1.10	2.04	1.36	.96	.34		0							
16			.06						0							
17	6:25 a. m.	1 45	1.00	2.64	2.24	1.48	.58	6:37 a. m.	.13	0.126	0.503					
17	7:00 p. m.	1 40	.42	.72	.56	.40	.25	8:00 a. m.	.033	.0187	.0763	8:15 a. m.	15	} 0.291		
18	6:51 a. m.	34	.47	3.48	1.68	.90	.83	6:56 a. m.	.18	.257	1.05	7:03 a. m.	7			
18-20			.06						0							
20	12:35 a. m.	1 33	1.11	2.40	1.56	1.24	.72	1:04 a. m.	.54	.241	.985	1:11 a. m.	7	.281		
20-31			.02						0							
Total			4.90						.88							
June:																
1-4			.07						0							
4	4:40 a. m.	4 55	.69	1.80	.96	.72	.14		0							
4-19			.31						0							
19	9:42 a. m.	4 13	1.06	2.64	2.08	1.28	.25		0							
19-30			.08						0							
Total			2.21						0							
July:																
1-31			.34						0							
August:																
1-4			.12													
4	8:50 a. m.	2 3	.28	.84	.40	.28	.14		0							
4-16			.04						0							
16	12:06 p. m.	59	.36	2.52	1.28	.66	.37		0							
16-19			.20						0							
19	6:12 p. m.	48	.70	2.04	1.60	1.06	.88		0							
20	2:50 p. m.	3 0	.59	.96	.76	.68	.20		0							
20-31			.32						0							
Total			2.61						0							
September:																
1-30			.32						0							
October:																
1-8			0						0							
8	1:18 p. m.	24	.43	2.16	1.32	.86	1.08		0							
9			.02						0							
9	8:32 p. m.	1 13	.30	.60	.40	.24	.28		0							
10	1:30 a. m.	2 51	1.01	1.68	1.48	1.10	.35		0							
10-31			.29						0							
Total			2.05						0							

TABLE 27.—Summary of rainfall and run-off from plot 1, June 8, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks			
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss	
				Maximum for—			Average rate for duration of rain									
				5-minute period	15-minute period	30-minute period										
1939		Hr. min.	In. 0.22	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.- ft.	In. per hr.		Hr. min.	Tons per acre		
November: 1-11									0						Nov. 10: Oats 3-5 inches high; soil dry, cracked, surface loose.	
11	4:06 a. m.	3 4	.28	0.36	0.24	0.24	0.09		0							
11	10:30 a. m.	5 0	.68	.48	.48	.36	.14		0							
11-29			.51						0							
29-30	2:30 p. m.	15 40	.48	.12	.12	.12	.05		0							Oats 2-4 inches high; soil 0-12 inches moist, dry below.
30			.23						0							
Total			2.40						0							
December: 1-22			0						0						Oats 3-5 inches high, soil 0-2 inches dry, 2-20 inches moderately moist, dry below.	
22	6:00 a. m.	5 30	.70	.96	.72	.58	.13		0							
22-31			.48						0							
Total			1.18						0							

TABLE 28.—Summary of rainfall and run-off from plot 2, June 7, 1938, to December 31, 1939

LOCATION: Latitude 31°27'24", longitude 96°52'34".

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 168 feet. Area, 0.243 acre.

Shape factor.—0.375

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 2.98 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—There are no defined drainageways, the area being almost a plane sloping surface. There is no evidence of serious erosion.

Special features.—The plot is artificially diked on three sides and has concrete collection gutters along the lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The area was in oats stubble when the station was installed in 1938. During 1939 it was in corn, planted in 3-foot straight rows running parallel to the lower boundary.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording

rain gage at station W-9 (fig. 28). Rainfall for February 25, 1939, was measured at gage W-4. No nonrecording rain gages were used. Snowfall was measured by weighing-recording rain gage W-9.

Run-off.—Run-off was measured by an H-1 flume with flat floor and an FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.057 second-foot), between 0.1' and 0.2-foot stage (0.015 and 0.057 second-foot, and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor, intake stoppage, especially on receding stages, shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 5 by 16 by 1½-foot silt box.

Ground-water levels.—There were no wells to indicate the fluctuations of the ground water in the vicinity of this plot.

Changes during the period.—The concrete collection gutters were covered December 20, 1939.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 25.24 inches. Maximum 5 minutes, 4.92 inches per hour, June 21, 1938. Maximum 15 minutes, 4.16 inches per hour, June 21, 1938. Maximum 30 minutes, 2.20 inches per hour, June 21, 1938.

TABLE 28.—Summary of rainfall and run-off from plot 2, June 7, 1938, to December 31, 1939—Continued

Date	Rainfall								Run-off					Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1938		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.- ft.	In. per hr.		Hr. min.	Tons per acre	
June:			0						0						
1-4			.92	1.08	0.80	0.56	0.29		0						
4	3:18 a. m.	3 12	.24						0						
4-9			.38	.48	.32	.24	.18		0						
9	2:22 a. m.	2 8	.14						0						
9-17			.72	2.04	1.48	1.24	.36	7:25 a. m.	.03	0.062	0.254	7:39 a. m.	14		Data not available.
17	6:00 a. m.	2 0	.01						0						
17-21			1.10	4.92	4.16	2.20	2.00	12:34 p. m.	.30	.405	1.65	12:45 p. m.	11		
21	12:27 p. m.	33	0						0						
21-30			3.51						.33						
Total															
July:			0						0						
1-9			.50	3.00	1.56	1.00	1.43		0						Oats stubble and weeds; soil dry and cracked.
9	4:49 p. m.	21	.02						0						
9-19			.46	.36	.24	.20	.13		0						Do.
19	7:00 a. m.	3 30	.28						0						
19-22			.40	.48	.24	.18	.08		0						Do.
22	4:30 a. m.	5 19	.28						0						
22-31			1.92						0						
Total															
August:			.12						0						
1-10			1.03	2.52	2.04	1.42	1.24		0						Plowed Aug. 2; dikes reconstructed Aug. 3.
10	2:55 p. m.	50	0						0						Bare land, soil dry and loose.
10-31			1.15						0						
Total															
September:			.10						0						
1-11			.92	2.52	1.96	1.40	.70		0						Do.
11	9:18 a. m.	1 19	.10						0						
11-30			1.12						0						
Total															
October:			.15						0						
1-31															Bedded Oct. 13.
November:			0						0						
1-3			.43	.72	.48	.28	.18		0						
3	8:20 a. m.	2 26	.23						0						Bare land, soil dry and loose.
3-30			.66						0						
Total															
December:			.31						0						
1-22			1.52	1.08	.84	.70	.35		0						Dec. 22: Bare land, soil 0-3 inches dry, 3-6 inches moist, below 6 inches dry and cracked.
22	3:16 p. m.	4 18	.23						0						
22-25			.62	.24	.16	.10	.05		0						Bare land, soil 0-12 inches moist, below 12 inches moderately dry.
25-26	10:00 a. m.	13 20	.05						0						
26-31			2.73						0						
Total															
1939															
January:			.02						0						
1-8			.90	2.04	1.32	1.18	.51		0						Bare land, soil moist.
8	5:30 p. m.	1 45	.26						0						
8-11			1.03	.72	.60	.36	.13		0						Do.
11	11:00 a. m.	7 58	.94	.84	.48	.36	.12		0						
11-12	10:00 p. m.	7 34	.39						0						
12-23			.27	.36	.20	.12	.12		0						Do.
23	4:23 a. m.	2 11	.06						0						
23-31			3.87						0						
Total															
February:			.12						0						
1-9			.26	2.64	1.04	.52	1.42		0						Do.
9	7:39 p. m.	11	.16						0						
9-17			.42	1.32	.88	.52	.19		0						Bare land, soil 0-6 inches moderately dry, below 6 inches moist.
17	10:36 a. m.	2 13	.03						0						
17-19			.77	.84	.48	.30	.22		0						
19	2:42 a. m.	3 30	.07						0						
19-25			1.03	1.56	1.00	.84	.23		0						Bare land, soil moist.
25	5:27 a. m.	4 33	.05						0						
25-28			2.91						0						
Total															
March:			.11						0						
1-25			1.05	2.04	1.60	1.20	.20		0						Corn planted Mar. 23.
25	8:20 a. m.	5 10	.02						0						Bare land, soil 0-6 inches moderately dry, below 6 inches moist.
25-31			1.18						0						
Total															

TABLE 28.—Summary of rainfall and run-off from plot 2, June 7, 1938, to December 31, 1939—Continued

Date	Rainfall								Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate	Period of rise		Silt loss	
				Maximum for—			Average rate for duration of rain			Maximum rate	Time of maximum rate					
				5-minute period	15-minute period	30-minute period										
1939																
April:		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec. ft.	In. per hr.		Hr. min.	Tons per acre		
1-5			0						0							
5	2:22 a. m.	49	.25	1.08	0.60	0.50	0.47		0						Same as Mar. 25 except corn 0-2 inches high.	
5-16			.16						0							
16	4:42 a. m.	1 8	.28	.84	.48	.32	.25		0						Same as Mar. 25 except corn 2-3 inches high.	
16-26			.09						0							
26	5:58 a. m.	1 2	.40	1.56	1.12	.72	.39		0						Same as Mar. 25 except corn 6-8 inches high; cultivated Apr. 20.	
26-30			.09						0							
Total			1.27						0							
May:			.19						0							
1-7			.36	1.20	.88	.64	.18		0						Cultivated May 1.	
7	10:05 p. m.	2 0							0						Corn 18-20 inches high; soil moderately dry, surface loose.	
7-16			.11						0							
16	4:58 a. m.	3 17	1.10	2.04	1.36	.96	.34		0						Same as May 7 except corn 22-26 inches high.	
16			.06						0							
17	6:25 a. m.	1 45	1.00	2.64	2.24	1.48	.58	6:34 a. m.	.011	0.019	0.0763			} 0.095		
17	7:00 p. m.	1 40	.42	.72	.56	.40	.25		(1)							
18	6:51 a. m.	34	.47	3.48	1.68	.90	.83		(1)							
18-20			.06						0							
20	12:35 a. m.	1 33	1.11	2.40	1.56	1.24	.72		(1)					.237	Corn 30-36 inches high; soil wet and soft.	
20-31			.02						0							
Total			4.90													
June:			.07						0							
1-4									0						Corn 60-72 inches high, silking, soil moist.	
4	4:40 a. m.	4 55	.69	1.80	.96	.72	.14		0							
4-19			.31						0							
19	9:42 a. m.	4 13	1.06	2.64	2.08	1.28	.25		0						Corn 60-72 inches high, eared; soil 0-6 inches moderately dry, below 6 inches moist.	
19-30			.08						0							
Total			2.21						0							
July:			.34						0							
1-31									0							
August:			.12						0							
1-4			.28	.84	.40	.28	.14		0						Corn mature; soil dry, cracks 1-2 inches wide, 2-3 inches deep.	
4	8:50 a. m.	2 3							0							
4-16			.04						0							
16	12:06 p. m.	59	.36	2.52	1.28	.66	.37		0						Corn stubble, soil dry, cracks 1-2 inches wide, 2-3 inch deep.	
16-19			.20						0							
19	6:12 p. m.	48	.70	2.04	1.60	1.06	.88		0						Do.	
20	2:50 p. m.	3 0	.59	.96	.76	.68	.20		0							
20-31			.32						0							
Total			2.61						0							
September:			.32						0							
1-30									0							
October:			0						0							
1-8			.43	2.16	1.32	.86	1.08		0						Do.	
8	1:18 p. m.	24	.02						0							
9			.30	.60	.40	.24	.28		0							
9	8:32 p. m.	1 13	1.01	1.68	1.48	1.10	.35		0							
10	1:30 a. m.	2 51	.29						0							
10-31			2.05						0						Oct. 19: Bedded.	
Total									0							
November:			.22						0							
1-11									0						Nov. 10: Bare land, soil dry, cracked, surface loose, cloddy.	
11	4:06 a. m.	3 4	.28	.36	.24	.24	.09		0							
11	10:30 a. m.	5 0	.68	.48	.48	.36	.14		0							
11-29			.51						0							
29-30	2:30 p. m.	15 40	.48	.12	.12	.12	.05		0						Bare land, soil 0-12 inches moist, dry below.	
30			.23						0							
Total			2.40						0							
December:			0						0							
1-22			.70	.96	.72	.58	.13		0						Bare land, soil 0-2 inches dry, loose, 2-20 inches moderately moist, dry below.	
22	6:00 a. m.	5 30							0							
22-31			.48						0							
Total			1.18						0							

¹ No record.

TABLE 29.—Summary of rainfall and run-off from plot 3, June 7, 1938, to December 31, 1939

LOCATION: Latitude 31°27'23'', longitude 96°52'33''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 168 feet. Area, 0.243 acre.

Shape factor.—0.375.

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 2.98 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. It is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—There are no defined drainageways, the area being almost a plane sloping surface. There is no evidence of serious erosion.

Special features.—The plot is artificially diked on three sides and has concrete collection gutters along the lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The area was in oats stubble when the station was installed in 1938. During 1939 it was in cotton planted in 3-foot straight rows running parallel to the lower boundary.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station W-9 (fig. 2). Rainfall for February 25, 1939, was measured at gage W-4. No nonrecording rain

gages were used. Snowfall was measured by weighing-recording rain gage W-9.

Run-off.—Run-off was measured by an H-1 flume with flat floor and an FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.057 second-foot), good between 0.1- and 0.2-foot stage (0.015 and 0.057 second-foot), and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 and 18, 1939) intake stoppage, especially on receding stages (May 17, 18, and 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 5- by 16- by 1½-foot silt box.

Ground-water levels.—There were no wells to indicate the fluctuations of the ground water in the vicinity of this plot.

Changes during the period.—The concrete collection gutters were covered December 20, 1939.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 25.24 inches. Maximum 5 minutes, 4.92 inches per hour, June 21, 1938. Maximum 15 minutes, 4.16 inches per hour, June 21, 1938. Maximum 30 minutes, 2.20 inches per hour, June 21, 1938.

Run-off.—Annual run-off amount, 1.16 inches, 1939. Maximum rate of run-off, 1.62 inches per hour (0.396 second-foot), May 18, 1939. No flow for long periods.

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
June: 1938															
1-4			0						0						
4	3:18 a. m.	3 12	.92	1.08	0.80	0.56	0.29		0						
4-9			.24						0						
9	2:22 a. m.	2 8	.38	.48	.32	.24	.18		0						
9-17			.14						0						
17	6:00 a. m.	2 0	.72	2.04	1.48	1.24	.36	7:38 a. m.	.023	0.047	0.193	7:42 a. m.	4		Data not available.
17-21			.01						0						
21	12:27 p. m.	33	1.10	4.92	4.16	2.20	2.00	12:46 p. m.	.23	.370	1.51	12:54 p. m.	8		
21-30			0						0						
Total			3.51						.25						
July:															
1-9			0						0						
9	4:49 p. m.	21	.50	3.00	1.56	1.00	1.43		0						Oats stubble and weeds; soil dry and cracked.
9-19			.02						0						
19	7:00 a. m.	3 30	.46	.36	.24	.20	.13		0						Do.
19-22			.28						0						
22	4:30 a. m.	5 19	.40	.48	.24	.18	.08		0						Do.
22-31			.28						0						
Total			1.92						0						
August:															
1-10			.12						0						
10	2:55 p. m.	50	1.03	2.52	2.04	1.42	1.24		0						Plowed Aug. 2; dikes reconstructed Aug. 3.
10-31			0						0						Bare land; soil dry and loose.
Total			1.15						0						
September:															
1-11			.10						0						
11	9:18 a. m.	1 19	.92	2.52	1.96	1.40	.70		0						Do.
11-30			.10						0						
Total			1.12						0						

TABLE 29.—Summary of rainfall and run-off from plot 3, June 7, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1938				In. per hr.	In. per hr.	In. per hr.	In. per hr.								
October: 1-31		Hr. min.	In. 0.15						In. 0	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	Bedded Oct. 13.
November: 1-3			0						0						
3	8:20 a. m.	2 26	.43	0.72	0.48	0.28	0.18		0						Bare land; soil dry and loose.
3-30			.23						0						
Total			.66						0						
December: 1-22			.31						0						
22	3:16 p. m.	4 18	1.52	1.08	.84	.70	.35		0						Bare land; soil 0-3 inches dry, 3-6 inches moist, below 6 inches dry and cracked.
22-25			.23						0						
25-26	10:00 a. m.	13 20	.62	.24	.16	.10	.05		0						Bare land; soil 0-12 inches moist, below 12 inches moderately dry.
26-31			.05						0						
Total			2.73						0						
1939															
January: 1-8			.02						0						
8	5:30 p. m.	1 45	.90	2.04	1.32	1.18	.51		0						Bare land; soil moist.
8-11			.26						0						
11	11:00 a. m.	7 58	1.03	.72	.60	.36	.13		0						Do.
11-12	10:00 p. m.	7 34	.94	.84	.48	.36	.12		0						Do.
12-23			.39						0						
23	4:23 a. m.	2 11	.27	.36	.20	.12	.12		0						
23-31			.06						0						
Total			3.87						0						
February: 1-9			.12						0						
9	7:39 p. m.	11	.26	2.64	1.04	.52	1.42		0						Do.
9-17			.16						0						
17	10:36 a. m.	2 13	.42	1.32	.88	.52	.19		0						Bare land; soil 0-6 inches moderately dry, below 6 inches moist.
17-19			.03						0						
19	2:42 a. m.	3 30	.77	.84	.48	.30	.22		0						
19-25			.07						0						
25	5:27 a. m.	4 33	1.03	1.56	1.00	.84	.23		0						Bare land; soil moist.
25-28			.05						0						
Total			2.91						0						
March: 1-25			.11						0						
25	8:20 a. m.	5 10	1.05	2.04	1.60	1.20	.20		0						Cultivated Mar. 21. Bare land; soil 0-6 inches moderately dry, below 6 inches moist.
25-31			.02						0						
Total			1.18						0						
April: 1-5			0						0						
5	2:22 a. m.	49	.25	1.08	.60	.50	.47		0						Do. Cotton planted Apr. 12.
5-16			.16						0						
16	4:42 a. m.	1 8	.28	.84	.48	.32	.25		0						Bare land; soil 0-6 inches moderately dry, below 6 inches moist.
16-26			.09						0						
26	5:58 a. m.	1 2	.40	1.56	1.12	.72	.39		0						Do.
26-30			.09						0						
Total			1.27						0						

TABLE 29.—Summary of rainfall and run-off from plot 3, June 7, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of max- imum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.- ft.	In. per hr.		Hr. min.	Tons per acre	
May: 1-7			0.19						0						
7	10:05 p. m.	2 0	.36	1.20	0.88	0.64	0.18		0						Cultivated May 4.
7-16			.11						0						Cotton 3 inches high; soil moder- ately dry.
16	4:58 a. m.	3 17	1.10	2.04	1.36	.96	.34		0						Same as May 7, except cotton 4 inches high.
16			.06						0						
17	6:25 a. m.	1 45	1.00	2.64	2.24	1.48	.58	6:25 a. m.	.21	0.193	0.788				} 0.81
17	7:00 p. m.	1 40	.42	.72	.56	.40	.25	7:05 p. m.	.069	.0337	.138				
18	6:51 a. m.	34	.47	3.48	1.68	.90	.83	6:53 a. m.	.24	.396	1.62	7:01 a. m.	8		
18-20			.06						0						
20	12:35 a. m.	1 33	1.11	2.40	1.56	1.24	.72	12:55 a. m.	.64	.361	1.48	1:09 a. m.	14	1.47	Cotton 4-5 inches high; soil wet and soft.
20-31			.02						0						
Total			4.90						1.16						
June: 1-4			.07						0						
4	4:40 a. m.	4 55	.69	1.80	.96	.72	.14		0						Cotton 8-10 inches high, squaring; soil moist; cultivated May 26.
4-19			.31						0						Cotton 12-14 inches high, squaring; soil 0-6 inches moderately dry, below 6 inches moist; cultivated June 12.
19	9:42 a. m.	4 13	1.06	2.64	2.08	1.28	.25		0						
19-30			.08						0						
Total			2.21						0						
July: 1-31			.34						0						July 18: Cultivated.
August: 1-4			.12						0						Cotton 18-20 inches high, opening, some dead; soil dry and cracked, surface loose.
4	8:50 a. m.	2 3	.28	.84	.40	.28	.14		0						
4-16			.04						0						Do.
16	12:06 p. m.	39	.36	2.52	1.28	.66	.37		0						
16-19			.20						0						
19	6:12 p. m.	48	.70	2.04	1.60	1.06	.88		0						Do.
20	2:50 p. m.	3 0	.59	.96	.76	.68	.20		0						
20-31			.32						0						
Total			2.61						0						
September: 1-30			.32						0						
October: 1-8			0						0						
8	1:18 p. m.	24	.43	2.16	1.32	.86	1.08		0						Cotton 18-20 inches high, picked; soil dry, surface loose, cracks 1-2 inches wide, 2-3 feet deep.
9			.02						0						
9	8:32 p. m.	1 13	.30	.60	.40	.24	.28		0						
10	1:30 a. m.	2 51	1.01	1.68	1.48	1.10	.35		0						
10-31			.29						0						Oct. 16: Oats planted.
Total			2.05						0						
November: 1-11			.22						0						Nov. 10: Oats 3-5 inches high; soil dry, cracked, surface loose.
11	4:06 a. m.	3 4	.28	.36	.24	.24	.09		0						
11	10:30 a. m.	5 0	.68	.48	.48	.36	.14		0						
11-29			.51						0						
29-30	2:30 p. m.	15 40	.48	.12	.12	.12	.05		0						Oats 2-4 inches high; soil 0-12 inches moist, dry and cracked below.
30			.23						0						
Total			2.40						0						
December: 1-22			0						0						
22	6:00 a. m.	5 30	.70	.96	.72	.58	.13		0						Oats 3-5 inches high; soil 0-2 inches dry, 2-20 inches moder- ately moist, moderately dry be- low.
22-31			.48						0						
Total			1.18						0						

TABLE 30.—Summary of rainfall and run-off from plot 4, June 7, 1938, to December 31, 1939

LOCATION: Latitude 31°27'22'', longitude 96°52'32''.

PHYSICAL CHARACTERISTICS:

Size.—Length of principal drainageway, 168 feet. Area, 0.243 acre.

Shape factor.—0.375.

Slope.—All of the watershed has a slope of 1 to 3 percent. Average slope is 2.98 percent.

Soil.—Predominating soil is Houston black clay, which has a depth of 60 inches or more. This soil is exceedingly tenacious and relatively impervious when wet and shrinks upon drying, forming large deep cracks that take up rainfall at high rates and in large quantities before the soil swells.

Erosion conditions.—There are no defined drainageways, the area being almost a plane sloping surface. There is no evidence of serious erosion.

Special features.—The plot is artificially diked on three sides and has concrete collection gutters along the lower edge.

LAND USE:

Plan.—Crop rotation (corn, cotton, oats, cotton), prevailing practices.

Vegetal cover and soil condition.—The area was in oats stubble when the station was installed in 1938. During 1939 it was in oats.

MEASUREMENTS:

Precipitation.—Precipitation was measured at the recording rain gage at station W-9 (fig. 2). No nonrecording rain

gages were used. Snowfall was measured by weighing-recording rain gage W-9.

Run-off.—Run-off was measured by an H-1 flume with flat floor and an FW-1 water-stage recorder. The records of run-off are excellent above 0.2-foot stage (0.057 second-foot), good between 0.1- and 0.2-foot stage (0.015 and 0.057 second-foot), and fair to poor below 0.1 foot, when all conditions were favorable. The presence of silt on the flume floor (May 17 and 18, 1939), intake stoppage, especially on receding stages (May 17, 18, and 20, 1939), shifts in gage elevation, expansion of recorder paper, and numerous other causes of minor errors may reduce the general accuracy of the records.

Soil loss.—Records of soil loss were obtained by Ramser silt sampler with 5-by-16-by-1½-foot silt box.

Ground-water levels.—There were no wells to indicate the fluctuations of the ground water in the vicinity of this plot.

Changes during the period.—The concrete collection gutters were covered December 20, 1939.

SUMMARY OF RECORDS:

Rainfall.—Annual precipitation 1939, 25.24 inches. Maximum 5 minutes, 4.92 inches per hour, June 21, 1938. Maximum 15 minutes, 4.16 inches per hour, June 21, 1938. Maximum 30 minutes, 2.20 inches per hour, June 21, 1938.

Date		Rainfall							Run-off						Remarks	
		Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maxi- mum rate	Period of rise		Silt loss
					Maximum for—			Average rate for duration of rain								
					5-minute period	15-minute period	30-minute period									
1938			Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.- ft.	In. per hr.		Hr. min.	Tons per acre	
June:				0						0						Data not available.
1-4				.92	1.08	0.80	0.56	0.29		0						
4		3:18 a. m.	3 12	.24						0						
4-9				.38	.48	.32	.24	.18		0						
9		2:22 a. m.	2 8	.14						0						
9-17				.72	2.04	1.48	1.24	.36		0						
17		6:00 a. m.	2 0	.01						0						
17-21				1.10	4.92	4.16	2.20	2.00	12:49 p. m.	.20	0.358	1.46	12:55 p. m.	6		
21		12:27 p. m.	33	0						0						
21-30				3.51						.20						
Total																
July:				0						0						Oats stubble and weeds; soil dry and cracked. Do. Do.
1-9				.50	3.00	1.56	1.00	1.43		0						
9		4:49 p. m.	21	.02						0						
9-19				.46	.36	.24	.20	.13		0						
19		7:00 a. m.	3 30	.28						0						
19-22				.40	.48	.24	.18	.08		0						
22		4:30 a. m.	5 19	.28						0						
22-31				1.92						0						
Total																
August:				.12						0						
1-10				1.03	2.52	2.04	1.42	1.24		0						
10		2:55 p. m.	50	0						0						
10-31				1.15						0						
Total																
September:				.10						0						Do.
1-11				.92	2.52	1.96	1.40	.70		0						
11		9:18 a. m.	1 19	.10						0						
11-30				1.12						0						
Total																

TABLE 30.—Summary of rainfall and run-off from plot 4, June 7, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Silt loss	Remarks	
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate			Period of rise
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
		Hr. min.	In. 0.15	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In. 0	Sec.-ft.	In. per hr.		Hr. min.	Tons per acre	
1938															
October: 1-31			0.15						0					Oats seeded Oct. 18.	
November: 1-3			0						0						
3	8:20 a. m.	2 26	.43	0.72	0.48	0.28	0.18		0					Bare land; soil dry and cracked, surface loose.	
3-30			.23						0						
Total			.66						0						
December: 1-22			.31						0						
22	3:16 p. m.	4 18	1.52	1.08	.84	.70	.35		0					Bare land; soil 0-2 inches dry, 2-6 inches moist, below 6 inches dry and cracked.	
22-25			.23						0						
25-26	10:00 a. m.	13 20	.62	.24	.16	.10	.05		0						
26-31			.05						0						
Total			2.73						0						
1939															
January: 1-8			.02						0						
8	5:30 p. m.	1 45	.90	2.04	1.32	1.18	.51		0					Oats 1-2 inches high, stand thin; soil moist.	
8-11			.26						0					Oats 1-2 inches high, stand fair; soil moist.	
11	11:00 a. m.	7 58	1.03	.72	.60	.36	.13		0						
11-12	10:00 p. m.	7 34	.94	.84	.48	.36	.12		0					Oats 1-2 inches high, stand good; soil moist.	
12-23			.39						0						
23	4:23 a. m.	2 11	.27	.36	.20	.12	.12		0						
23-31			.06						0						
Total			3.87						0						
February: 1-9			.12						0						
9	7:39 p. m.	11	.26	2.64	1.04	.52	1.42		0					Do.	
9-17			.16						0						
17	10:36 a. m.	2 13	.42	1.32	.88	.52	.19		0					Oats 2-3 inches high; soil 0-6 inches moderately dry, below 6 inches moist.	
17-19			.03						0						
19	2:42 a. m.	3 30	.77	.84	.48	.30	.22		0					Oats 2-3 inches high; soil moist.	
19-25			.07						0						
25	5:27 a. m.	4 33	1.03	1.56	1.00	.84	.23		0						
25-28			.05						0						
Total			2.91						0						
March: 1-25			.11						0						
25	8:20 a. m.	5 10	1.05	2.04	1.60	1.20	.20		0					Oats 3-5 inches high; soil 0-6 inches moderately dry, below 6 inches moist.	
25-31			.02						0						
Total			1.18						0						
April: 1-5			0						0						
5	2:22 a. m.	49	.25	1.08	.60	.50	.47		0					Same as Mar. 25, except oats 5-6 inches high.	
5-16			.16						0					Same as Mar. 25, except oats 8-10 inches high.	
16	4:42 a. m.	1 8	.28	.84	.48	.32	.25		0					Same as Mar. 25, except oats 10-12 inches high, heading.	
16-26			.09						0						
26	5:58 a. m.	1 2	.40	1.56	1.12	.72	.39		0						
26-30			.09						0						
Total			1.27						0						

TABLE 30.—Summary of rainfall and run-off from plot 4, June 7, 1938, to December 31, 1939—Continued

Date	Rainfall							Run-off					Remarks		
	Time began	Duration	Total amount	Intensity				Time rise began	Total amount	Maximum rate		Time of maximum rate		Period of rise	Silt loss
				Maximum for—			Average rate for duration of rain								
				5-minute period	15-minute period	30-minute period									
1939		Hr. min.	In.	In. per hr.	In. per hr.	In. per hr.	In. per hr.		In.	Sec.-ft.	In. per hr.	Hr. min.	Tons per acre		
May: 1-7			0.19						0						
7	10:05 p. m.	2 0	.36	1.20	0.88	0.64	0.18		0					Oats 24-26 inches high, headed; soil dry and cracked.	
7-16			.11						0						
16	4:58 a. m.	3 17	1.10	2.04	1.36	.96	.34		0					Oats 24-26 inches high, ripening; soil dry and cracked.	
16			.06						0						
17	6:26 a. m.	1 45	1.00	2.64	2.24	1.48	.58		0						
17	7:00 p. m.	1 40	.42	.72	.56	.40	.25		0						
18	6:51 a. m.	34	.47	3.48	1.68	.90	.83		0						
18-20			.06						0						
20	12:35 a. m.	1 33	1.11	2.40	1.56	1.24	.72		0						
20-31			.02						0						
Total			4.90						0						
June: 1-4			.07						0						
4	4:40 a. m.	4 55	.69	1.80	.96	.72	.14		0					Oats stubble; soil moist.	
4-19			.31						0					June 19: oats stubble; soil 0-6 inches moderately dry, below 6 inches moist.	
19	9:42 a. m.	4 13	1.06	2.64	2.08	1.28	.25		0						
19-30			.08						0					Plowed June 29.	
Total			2.21						0						
July: 1-31			.34						0						
August: 1-4			.12						0						
4	8:50 a. m.	2 3	.28	.84	.40	.28	.14		0					Aug. 2: disked.	
4-16			.04						0					Bare land; soil 0-6 inches moderately dry, moist below.	
16	12:06 p. m.	59	.36	2.52	1.28	.66	.37		0					Do.	
16-19			.20						0						
19	6:12 p. m.	48	.70	2.04	1.60	1.06	.88		0					Do.	
20	2:50 p. m.	3 0	.59	.96	.76	.68	.20		0						
20-31			.32						0						
Total			2.61						0						
September: 1-30			.32						0						
October: 1-8			0						0						
8	1:18 p. m.	24	.43	2.16	1.32	.86	1.08		0					Do.	
9			.02						0						
9	8:32 p. m.	1 13	.30	.60	.40	.24	.28		0						
10	1:30 a. m.	2 51	1.01	1.68	1.48	1.10	.35		0						
10-31			.29						0					Oct. 19: Bedded.	
Total			2.05						0						
November: 1-11			.22						0						
11	4:06 a. m.	3 4	.28	.36	.24	.24	.09		0					Nov. 10: Bare land; soil 0-6 inches moderately dry, moist below.	
11	10:30 a. m.	5 0	.68	.48	.48	.36	.14		0						
11-29			.51						0						
29-30	2:30 p. m.	15 40	.48	.12	.12	.12	.05		0					Bare land; soil moist.	
30			.23						0						
Total			2.40						0						
December: 1-22			0						0						
22	6:00 a. m.	5 30	.70	.96	.72	.58	.13		0					Do.	
22-31			.48						0						
Total			1.18						0						

TABLE 31.—Daily run-off¹ from watershed J, 1937-39

Day	1937					1938 ²						1939 ²				
	June	July	Sept.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jan.	Feb.	Mar.	May	June
	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1		0	0	0	0	0.0002	0.0003	0.0004	0.0008	0.0001	0	0	0	T	0	0
2		0	0	0	0	T	.0002	.0003	.0003	T	0	0	0	0	0	0
3		0	0	0	0	T	.0002	.0003	.0003	T	0	0	0	0	0	0
4		0	0	0	0	T	.0002	.0003	.0001	T	0	0	0	0	0	0
5		0	0	0	0	T	T	.0003	.0001	T	0	0	0	0	0	0
6		0	T	0	0	.0030	T	.0004	.0001	T	0	0	0	0	0	0
7		0	T	0	0	.0006	T	.0001	.0039	T	0	0	0	0	0	0
8		0	0	T	0	.0003	T	.0002	.0012	T	0	0	0	0	0	0
9		T	0	.0087	0	.0001	T	.0003	.0002	T	0	0	0	0	0	0
10		T	0	T	0	.0005	T	.0001	.0001	T	0	0	0	0	0	0
11		T	0	0	0	.0003	T	.0001	T	T	0	T	0	0	0	0
12		T	0	0	0	.0001	T	.0001	T	T	0	.0111	0	0	0	0
13		0	0	0	T	.0001	T	T	T	T	0	.0052	0	0	0	0
14		0	0	0	T	T	T	T	T	T	0	.0003	0	0	0	0
15		0	0	0	T	T	T	T	.7402	0	0	.0001	0	0	0	0
16		0	0	0	.0007	T	.2163	T	.0418	0	0	T	0	0	.0025	0
17		0	0	0	.0026	T	.0335	T	.0012	0	.0203	0	0	0	.0925	0
18		0	0	0	.0003	T	.2422	T	.0004	0	.0067	0	T	0	.1503	0
19		0	0	0	.0001	T	.0077	T	.0002	0	.0018	0	.0011	0	.0031	.0104
20		0	0	0	T	.0001	.0030	T	.0002	0	.0015	0	.0011	0	.2512	.0133
21		0	0	0	T	.0038	.1068	T	.0002	0	.0206	0	.0004	0	.0037	.0007
22		0	0	T	.0857	.0027	.0225	T	.0002	0	.0199	0	T	0	.0005	T
23		0	0	T	.0505	1.3776	.0038	T	.0001	0	.0017	0	T	0	T	0
24	0	0	0	T	.0023	.0742	.0021	T	.0001	0	.0001	0	T	0	T	0
25	0	0	0	0	.0007	.0056	.0017	T	.0001	0	T	0	.0419	.0001	0	0
26	0	0	0	0	.0004	.0013	.0014	T	.0003	0	T	0	.0067	.0001	0	0
27	0	0	0	0	.0003	.0006	.0010	.0837	.0003	0	0	0	.0010	T	0	0
28	0	0	0	0	.0043	.0005	.0006	.3070	.0001	0	0	0	.0002	T	0	0
29	0	0	0	0	.0054	.0005		.1149	.0001	0	0	0		0	0	0
30	0	0	0	0	.0023	.0005		.0041	.0001	0	0	0		0	0	0
31		0			.0006	.0003		.0022		0		0		0	0	
Total		T	T	.0087	.1562	1.4729	.6435	.5148	.7927	.0006	.0726	.0167	.0524	.0002	.5038	.0244

¹ No run-off for days not listed.² Total run-off January-June 1938, 3.50 inches; January-June 1939, 0.60 inch.TABLE 32.—Daily run-off¹ from watershed Y, 1937-39

Day	1937						1938 ²						1939 ²			
	May	June	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jan.	Feb.	Mar.	May
	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1	0	0	0	0	0	0	0.0016	0.0012	0.0011	0.0001	0.0002	T	0	0	0	0
2	0	0	0	0	0	0	.0008	.0008	.0008	.0003	.0001	T	0	0	0	0
3	0	0	0	0	0	0	.0008	.0008	.0018	.0002	.0003	T	0	0	0	0
4	0	0	0	0	0	0	.0005	.0008	.0005	.0002	.0001	T	0	0	0	0
5	0	0	0	0	0	0	.0120	.0006	.0005	.0002	.0002	T	0	0	0	0
6	0	.5137	0	0	0	0	.0410	.0004	.0003	.0002	.0001	T	0	0	0	0
7	0	.0413	.0016	0	0	0	.0025	.0004	.0002	.0063	.0001	T	0	0	0	0
8	0	.0041	0	0	T	0	.0014	.0004	.0002	.0023	.0011	T	0	0	0	0
9	0	T	0	T	.0077	0	.0095	.0004	.0009	.0007	.0001	0.0005	0	0	0	0
10	0	T	0	0	.0008	0	.0074	.0003	.0012	.0003	.0006	.0002	0	0	0	0
11	0	T	0	0	.0001	0	.0035	.0002	.0015	.0002	.0003	T	T	0	0	0
12	0	T	0	0	0	0	.0012	.0002	.0002	.0002	.0001	T	.0140	0	0	0
13	0	T	0	.0001	0	0	.0008	.0002	.0005	.0002	.0038	T	.0001	0	0	0
14	0	T	0	0	0	.0001	.0008	.0002	.0002	.0001	.0005	T	0	0	0	0
15	0	T	0	0	0	.0023	.0008	.0002	.0009	.6404	.0002	0	0	0	0	0
16	0	T	0	T	0	.0546	.0007	.5358	T	.0237	.0003	T	0	0	0	.0001
17	0	T	0	.0005	0	.0070	.0008	.0354	.0003	.0427	.0008	.0006	0	0	0	.1559
18	0	T	0	0	0	.0120	.0006	.1978	.0002	.0032	.0004	.0001	0	T	0	.1269
19	0	T	0	0	0	.0056	.0006	.0030	.0006	.0012	.0001	.0001	0	.0050	0	.0002
20	0	T	0	0	0	.0021	.0006	.0021	.0001	.0008	T	T	0	T	0	.2575
21	0	T	0	0	0	.0008	.0258	.1976	T	.0007	T	.0134	0	0	0	0
22	0	T	0	0	0	.2505	.0145	.0095	.0001	.0002	T	.0007	0	0	0	0
23	0	T	0	0	0	.0239	1.5955	.0046	.0010	.0002	.0109	T	0	0	0	0
24	0	T	0	0	0	.0049	.0275	.0033	.0006	.0005	.0001	0	0	T	0	0
25	0	T	0	0	0	.0039	.0017	.0016	.0002	.0011	T	0	0	.0457	.0007	0
26	0	T	0	0	0	.0042	.0012	.0004	.0001	.0069	T	0	0	.0001	T	0
27	0	T	0	0	0	.0057	.0012	.0017	.0017	.0064	T	0	0	.0001	0	0
28	0	0	0	0	0	.0547	.0012	.0016	.1481	.0014	T	0	0	T	0	0
29	0	0	0	0	0	.0123	.0014			.0003	T	0	0		0	0
30	0	0	0	0	0	.0056	.0016			.0025	.0005	T	0		0	0
31	T					.0046	.0016			.0007			0		0	0
Total	T	.5591	.0016	.0006	.0186	.4548	1.7611	1.0015	.1820	.7431	.0204	.0156	.0141	.0509	.0007	.5406

¹ No run-off for days not listed.² Total run-off January-June 1938, 3.72 inches; January-May 1939, 0.606 inch.

TABLE 33.—Daily run-off¹ from watershed W1, 1937-39

Day	1937						1938 ²									1939 ²						
	June	July	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Jan.	Feb.	Mar.	Apr.	May	June	July
	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1.....	0.0003	0	0	0	0	0.0008	0.0024	0.0044	0.0024	0.0021	0.0018	0.0011	0.0006	0.0005	0.0003	0	0.0004	0.0010	0.0009	0.0005	0.0009	0.0007
2.....	.0003	.0001	0	0	0	.0006	.0024	.0048	.0033	.0016	.0016	.0011	.0008	.0006	.0004	0	.0005	.0010	.0011	.0004	.0010	.0006
3.....	.0002	0	0	0	0	.0004	.0024	.0048	.0024	.0017	.0012	.0010	.0007	.0005	.0003	0	.0004	.0009	.0011	.0005	.0010	.0005
4.....	.0003	0	0	0	0	.0005	.0024	.0048	.0021	.0016	.0011	.0019	.0007	.0005	.0004	0	.0004	.0010	.0010	.0004	.0013	.0005
5.....	.0002	0	0	0	0	.0003	.0067	.0042	.0020	.0016	.0011	.0012	.0006	.0002	.0005	0	.0005	.0010	.0011	.0004	.0012	.0004
6.....	.0003	.0341	0	0	0	.0003	.0275	.0024	.0013	.0019	.0012	.0009	.0008	.0003	.0006	0	.0006	.0013	.0011	.0004	.0016	.0003
7.....	.0003	.0013	0	0	0	.0005	.0036	.0024	.0011	.0081	.0015	.0010	.0008	.0003	.0010	0	.0005	.0012	.0011	.0008	.0016	.0002
8.....	.0002	.0001	0	0	0	.0005	.0024	.0024	.0013	.0018	.0024	.0012	.0007	.0001	.0007	T	.0006	.0010	.0008	.0007	.0016	.0003
9.....	.0007	T	0	0	1329	.0008	.0061	.0024	.0043	.0016	.0022	.0021	.0013	.0003	.0005	T	.0007	.0011	.0008	.0002	.0014	.0003
10.....	.0009	T	0	0	.0005	.0007	.0060	.0024	.0025	.0016	.0016	.0012	.0008	.0007	.0005	0	.0005	.0011	.0006	.0001	.0011	.0003
11.....	.0006	T	0	0	.0003	.0007	.0048	.0024	.0024	.0011	.0016	.0009	.0007	.0004	.0014	.0007	.0004	.0009	.0004	.0003	.0011	.0006
12.....	.0003	T	0	0	.0002	.0003	.0024	.0024	.0024	.0012	.0016	.0009	.0007	.0004	.0002	.0437	.0005	.0008	.0005	.0001	.0011	.0012
13.....	.0001	T	0	0	.0003	.0005	.0024	.0024	.0024	.0011	.0080	.0012	.0006	.0004	.0002	.0003	.0005	.0007	.0007	.0001	.0010	.0011
14.....	.0001	T	0	0	.0003	.0016	.0024	.0024	.0024	.0012	.0024	.0011	.0007	.0004	.0003	.0001	.0007	.0006	.0007	.0002	.0009	.0004
15.....	.0001	T	0	0	.0001	.0012	.0024	.0024	.0019	.6893	.0021	.0009	.0007	.0002	.0003	.0002	.0007	.0007	.0006	.0002	.0009	.0002
16.....	0	T	T	T	.0003	.0880	.0024	.6043	.0013	.0246	.0017	.0010	.0008	.0003	.0003	T	.0006	.0007	.0012	.0010	.0008	.0002
17.....	0	T	T	.0010	.0003	.0095	.0024	.0300	.0012	.0263	.0016	.0014	.0007	.0002	.0003	.0001	.0009	.0007	.0007	.1921	.0008	.0002
18.....	0	T	T	.0001	.0004	.0013	.0024	.1805	.0010	.0048	.0015	.0010	.0006	.0004	.0002	T	.0010	.0006	.0004	.1643	.0009	.0001
19.....	0	T	T	T	.0002	.0013	.0024	.0039	.0011	.0036	.0016	.0006	.0011	.0003	.0001	T	.0151	.0006	.0004	.0012	.0026	.0001
20.....	0	T	T	T	.0006	.0012	.0033	.0045	.0013	.0024	.0016	.0004	.0011	.0004	.0002	T	.0007	.0008	.0006	.3416	.0009	.0001
21.....	0	0	T	T	.0005	.0018	.0417	.1971	.0010	.0024	.0012	.0286	.0011	.0002	.0001	T	.0006	.0009	.0003	.0013	.0009	.0001
22.....	0.0001	0	0	T	.0010	.3601	.0164	.0085	.0020	.0024	.0011	.0014	.0015	.0003	.0003	T	.0006	.0008	.0003	.0010	.0008	.0001
23.....	.0004	0	0	T	.0009	.0200	.1.9052	.0057	.0018	.0024	.0118	.0010	.0011	.0002	.0001	.0006	.0006	.0008	.0006	.0006	.0007	T
24.....	.0005	0	0	0	.0009	.0039	.0242	.0045	.0012	.0024	.0015	.0009	.0010	.0004	T	.0004	.0011	.0009	.0006	.0010	.0006	T
25.....	.0004	0	0	0	.0011	.0024	.0036	.0042	.0011	.0040	.0016	.0011	.0008	.0003	T	.0003	.0801	.0054	.0005	.0010	.0008	T
26.....	.0004	0	0	0	.0007	.0023	.0024	.0038	.0010	.0096	.0016	.0011	.0009	.0003	0	.0003	.0020	.0015	.0010	.0009	.0007	0
27.....	.0004	0	0	0	.0005	.0024	.0024	.0042	.0041	.0095	.0016	.0006	.0009	.0003	0	.0003	.0010	.0012	.0007	.0009	.0006	0
28.....	.0004	0	0	0	.0005	.0249	.0024	.0039	.1078	.0036	.0014	.0008	.0003	.0003	0	.0005	.0012	.0012	.0003	.0009	.0006	0
29.....	.0003	0	0	0	.0008	.0076	.0042	-----	.0089	.0024	.0012	.0007	.0006	.0003	0	.0006	-----	.0010	.0003	.0010	.0005	0
30.....	.0004	0	0	0	.0004	.0042	.0042	-----	.0026	.0024	.0012	.0007	.0003	.0003	0	.0005	-----	.0012	.0003	.0010	.0006	0
31.....	0	-----	0	-----	-----	.0024	.0024	-----	.0022	-----	.0011	-----	.0006	.0002	-----	.0004	-----	.0010	-----	.0009	-----	0
Total.....	.0048	.0356	.0013	.1437	.5430	2.0983	1.1021	.1738	.8223	.0647	.0590	.0255	.0105	.0092	.0490	.1135	.0346	.0207	.7160	.0305	.0085	

¹ No run-off for days not listed.² Total run-off January-September 1938, 4.37 inches; January-July 1939, 0.973 inch.TABLE 34.—Daily run-off¹ from watershed W2, 1937-39

Day	1937						1938 ²									1939 ²						
	June	July	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	
1-----		0.0003	0	0	0	0.0009	0.0068	0.0017	0.0024	0.0072	0.0048	0.0007	0.0004	0	0	0	0.0001	0.0022	0.0007	0	0.0019	
2-----		.0002	0	0	0	.0010	.0096	.0017	.0024	.0072	.0043	.0006	T	0	0	0	.0003	.0027	.0008	0	.0021	
3-----		.0002	0	0	0	.0007	.0079	.0017	.0048	.0072	.0024	.0001	T	0	0	0	.0001	.0036	.0019	0	.0020	
4-----		.0002	0	0	0	.0004	.0048	.0017	.0024	.0072	.0029	.0063	.0003	0	0	0	.0003	.0040	.0005	0	.0084	
5-----		.0002	0	0	0	.0004	.0081	.0017	.0024	.0072	.0041	.0007	.0001	0	0	0	.0001	.0044	.0030	0	.0042	
6-----		.0002	.0393	0	0	.0004	.0501	.0017	.0024	.0082	.0105	.0001	.0001	0	0	0	.0001	.0013	.0019	0	.0024	
7-----		.0001	.0016	0	0	.0004	.0102	.0017	.0024	.0160	.0131	.0005	.0001	0	0	0	.0001	.0045	.0004	T	.0007	
8-----		.0001	.0003	0	0	.0004	.0024	.0017	.0024	.0096	.0097	.0020	T	0	0	.0001	0	.0035	.0001	T	.0015	
9-----		.0011	.0001	T	.0918	.0003	.0063	.0017	.0024	.0078	.0096	.0057	.0014	0	0	.0005	0	.0032	T	0	.0011	
10-----		.0063	0	0	.0010	.0009	.0141	.0017	.0024	.0072	.0059	.0044	.0008	.0004	0	T	.0006	.0029	.0005	0	.0009	
11-----		.0042	.0002	0	0	.0008	.0014	.0096	.0017	.0024	.0072	.0027	.0024	.0001	.0002	0	.0026	0	.0011	.0002	0	.0008
12-----		.0019	.0004	0	0	.0007	.0013	.0020	.0017	.0024	.0056	.0021	.0024	0	0	0	.0250	0	.0013	T	0	.0006
13-----		.0008	0	.0006	.0005	.0014	.0012	.0017	.0024	.0043	.0009	.0016	0	0	0	0	.0007	0	.0019	.0001	0	.0001
14-----		.0002	0	.0001	.0005	.0027	.0024	.0017	.0024	.0033	.0008	.0064	.0001	0	0	0	.0003	0	.0018	.0002	0	T
15-----		.0001	0	.0001	.0006	.0045	.0045	.0017	.0024	.4802	.0008	.0072	.0001	0	0	0	.0002	0	.0011	.0003	0	0
16-----		.0001	0	.0002	.0004	.0585	.0072	.2679	.0024	.0503	.0009	.0049	0	0	0	0	.0001	0	.0010	.0018	0	0
17-----		.0001	0	.0032	.0003	.0079	.0072	.0165	.0024	.0189	.0022	.0086	0	0	0	0	.0002	.0006	.0011	.0002	.1075	0
18-----		.0001	0	.0003	.0008	.0024	.0072	.2046	.0036	.0120	.0008	.0048	0	0	0	0	.0003	.0215	.0007	0	.0026	.0024
19-----		T	0	T	.0003	.0023	.0072	.0152	.0048	.0024	.0009	.0048	.0012	0	0	0	.0002	.0007	.0013	0	.0990	0
20-----		T	0	0	.0004	.0024	.0072	.0144	.0048	.0024	.0015	.0036	.0015	0	0	0	.0003	.0009	.0008	0	.2657	.0008
21-----		T	0	0	.0004	.0031	.0124	.2219	.0048	.0024	.0013	.0164	.0014	0	0	0	.0001	.0008	.0010	0	.0015	.0011
22-----		.0001	0	0	.0045	.1770	.0151	.0214	.0099	.0024	.0006	.0144	.0026	0	0	0	.0001	.0002	.0005	0	.0031	.0010
23-----	0.0903	.0001	0	0	.0055	.0267	.7435	.0048	.0070	.0024	.0095	.0142	.0031	0	0	0	.0017	.0006	.0004	0	.0028	.0002
24-----	.0016	T	0	0	.0032	.0098	.0601	.0048	.0048	.0024	.0016	.0037	.0011	0	0	0	.0019	.0016	.0004	0	.0019	T
25-----	.0011	0	0	0	.0050	.0091	.0166	.0048	.0048	.0030	.0004	.0024	.0014	0	.0001	.0013	.0744	.0133	T	.0012	T	
26-----	.0011	0	0	0	.0011	.0109	.0134	.0030	.0043	.0056	.0006	.0024	.0011	0	.0001	.0006	.0046	.0024	.0001	.0015	0	
27-----	.0011	0	0	0	.0008	.0140	.0083	.0024	.0184	.0041	.0011	.0024	.0006	0	0	0	.0002	.0043	.0011	0	.0018	0
28-----	.0007	0	0	0	.0008	.0463	.0022	.0024	.0604	.0024	.0022	.0024	T	0	0	0	.0001	.0017	.0019	0	.0022	0
29-----	.0007	0	0	0	.0008	.0209	.0017	-----	.0175	.0036	.0010	.0019	.0002	0	0	0	.0001	-----	.0012	0	.0029	0
30-----	.0003	0	0	0	.0008	.0138	.0017	-----	.0107	.0048	.0003	.0012	.0002	0	0	0	.0003	-----	.0014	0	.0024	0
31-----	0	-----	0	-----	-----	.0131	.0017	-----	-----	.0083	-----	-----	T	0	0	0	.0003	-----	.0013	-----	.0022	-----
Total-----	-----	.0166	.0419	.0045	.1210	.4353	1.0527	.8096	.2073	.7045	.0998	.1292	.0179	.0006	.0002	.0372	.1136	.0693	.0127	.4983	.0322	-----

TABLE 35.—Daily run-off¹ from plots and small watersheds, 1937-39

Watershed No.	Date record started	1937	1938																						1939				
		Dec.	Jan.			Feb.					Mar.	Apr.							May		June		Year	May				Year	
		22	23	24	16	17	18	19	20	21	28	6	7	14	15	16	17	26	27	7	23	17	21		16	17	18	20	
		In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
P1-----	June 8, 1938																				0.005	0.26	0	0	0.16	0.18	0.54	0.88	
P2-----	June 7, 1938																				.03	.30	0	0					
P3-----	June 7, 1938																				.02	.23	0	0	.28	.24	.64	1.16	
P4-----	June 7, 1938																							0	0	0	0	0	
2-----	Apr. 1, 1938										0	0	0	0.33	0	0	0	0	0	0	0	0	0	0	.14	.12	.31	.57	
3-----	Dec. 7, 1938																							.23	.12	.34	.69		
5-----	Oct. 1, 1888																							.40	.27	.55	1.22		
6-----	Nov. 9, 1938																							.48	.34	.69	1.51		
7-----	Mar. 11, 1938										0.05	0	0	0	.47	0	0	0	0	0	0	0	0	.44	.25	.50	1.19		
11-----	Mar. 2, 1938										.025	0	0	0	.65	0	0	0	0	0	0	0	0	.20	.21	.36	.78		
12-----	Dec. 15, 1937		1.52	0.006	0.43	.02	.16	0.00	0.00	.15	.009	0	0	0	.18	0	0	0	0	0	0	0	0	0	0	0	0	0	
13-----	Mar. 8, 1938										.27	0	0	0	1.06	0	.01	.01	.02	0	.03	0	0	.04	.61	.20	.48	1.33	
14-----	Mar. 9, 1939																							.29	.58	.20	.50		
16-----	Sept. 24, 1937		0.22	1.51	.15	.03	.008	.18	.15	.13	.08	.20	.01	.10	.001	1.35	.03	.01	.02	0	.01	0	0	3.97	.15	.74	.31	.65	1.85
17-----	Feb. 6, 1939																							0	.30	.18	.50		
18-----	Apr. 2, 1938											0	0	0	.52	0	0	0	0	0	0	0	0	0	.22	.20	.39	.81	

¹ No run-off for days not listed.

TABLE 36.—Run-off from watershed J for selected storms, 1937-39

[Area 5,860 acres, rainfall measured at recording rain gages 2, 5, 14, 27, 31, 44, 55, 66, 69, 85, 94, 107]

Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off
STORM OF DEC. 22, 1937; TOTAL RAINFALL 1.34 INCHES			STORM OF DEC. 22, 1937; TOTAL RAINFALL 1.34 INCHES—Con.			STORM OF DEC. 22, 1937; TOTAL RAINFALL 1.34 INCHES—Con.			STORM OF DEC. 22, 1937; TOTAL RAINFALL 1.34 INCHES—Con.		
Dec. 22			Dec. 22			Dec. 22			Dec. 22		
a. m.	Sec.-ft.	In.	a. m.	Sec.-ft.	In.	p. m.	Sec.-ft.	In.	p. m.	Sec.-ft.	In.
1:40	0.0060	T	11:15	1.37	0.0002	3:35	29.0	0.0049	7:35	63.8	0.0108
:50	.0060	T	:20	1.50	.0002	:40	29.3	.0050	:40	63.4	.0107
2:35	.0110	T	:25	1.72	.0003	:45	29.6	.0050	:45	63.4	.0107
:50	.0100	T	:30	1.87	.0003	:55	30.9	.0052	8:00	61.6	.0104
3:10	.0140	T	:35	2.08	.0004	4:00	37.4	.0063	:15	60.5	.0102
4:00	.0260	T	:40	2.30	.0004	:03	42.9	.0073	:30	59.4	.0101
5:00	.0870	T	:45	2.41	.0004	:05	43.4	.0073	:40	56.6	.0096
:30	.100	T	:50	2.66	.0004	:10	45.2	.0076	:45	57.0	.0096
6:00	.0870	T	:55	2.72	.0005	:15	46.6	.0079	9:00	55.0	.0093
7:00	.0650	T	12:00	2.78	.0005	:20	48.0	.0081	:15	53.3	.0090
:25	.0650	T	p. m.			:25	49.8	.0084	:30	51.2	.0087
:30	.0675	T	12:05	2.84	.0005	:30	51.6	.0087	:45	48.9	.0083
:35	.0700	T	:10	2.91	.0005	:35	52.4	.0089	10:00	47.1	.0080
:40	.0750	T	:15	2.91	.0005	:40	53.3	.0090	:11:00	42.4	.0072
:45	.0840	T	:20	2.98	.0005	:45	54.2	.0092	12:00	37.8	.0064
:50	.0930	T	:25	3.04	.0005	:50	55.0	.0093			
:55	.110	T	:30	3.04	.0005	:55	55.8	.0094	Dec. 23		
8:00	.139	T	:35	3.10	.0005	5:00	57.4	.0097	a. m.		
:05	.168	T	:40	3.30	.0006	:03	57.8	.0098	1:00	36.0	.0061
:10	.207	T	:45	3.50	.0006	:05	58.6	.0099	2:00	32.4	.0055
:15	.255	T	:47	3.44	.0007	:08	57.8	.0098	3:00	29.3	.0050
:20	.294	T	:50	4.01	.0007	:10	58.6	.0099	4:00	25.9	.0044
:25	.330	T	:55	4.01	.0007	:15	59.7	.0101	:30	24.4	.0041
:30	.361	.0001	1:00	4.24	.0007	:20	60.5	.0102	5:00	22.6	.0038
:35	.382	.0001	:05	4.75	.0008	:25	60.5	.0102	:30	21.1	.0036
:40	.416	.0001	:10	5.20	.0009	:30	61.6	.0104	6:00	19.6	.0033
:45	.416	.0001	:15	5.77	.0010	:35	61.9	.0105	:30	18.3	.0031
:50	.428	.0001	:20	6.45	.0011	:40	62.3	.0105	7:00	16.7	.0028
:55	.440	.0001	:25	6.85	.0012	:45	64.1	.0108	:30	15.6	.0026
9:00	.466	.0001	:30	6.67	.0013	:50	64.8	.0110	8:00	14.6	.0025
:05	.479	.0001	:35	8.67	.0015	:55	66.6	.0113	9:00	13.1	.0022
:10	.492	.0001	:40	9.33	.0016	6:00	68.0	.0115	:30	12.4	.0021
:15	.506	.0001	:45	10.4	.0018	:03	68.6	.0116	10:00	11.4	.0019
:20	.520	.0001	:50	11.2	.0019	:05	68.6	.0116	:30	10.6	.0018
:25	.549	.0001	:55	12.4	.0021	:10	68.3	.0116	:30	9.87	.0017
:30	.580	.0001	2:00	13.4	.0023	:15	68.6	.0116	11:00	9.33	.0016
:35	.630	.0001	:03	14.0	.0024	:20	69.0	.0117	:30	8.67	.0015
:40	.686	.0001	:05	14.6	.0025	:25	69.3	.0117	12:00	8.16	.0014
:45	.726	.0001	:10	16.3	.0028	:30	69.0	.0117			
:50	.812	.0001	:13	17.3	.0029	:35	69.6	.0118	p. m.		
:55	.882	.0001	:15	17.5	.0030	:36	70.0	.0118	12:30	7.55	.0013
10:00	.907	.0002	:20	18.5	.0031	:40	68.6	.0118	1:00	6.62	.0011
:05	.958	.0002	:25	19.6	.0033	:45	68.0	.0115	:30	6.32	.0011
:10	.985	.0002	:30	20.6	.0035	:50	67.6	.0114	2:00	5.97	.0010
:15	1.01	.0002	:35	22.2	.0039	:55	66.9	.0113	3:00	5.39	.0009
:20	1.04	.0002	:40	25.4	.0043	7:00	66.2	.0114	4:00	4.49	.0008
:25	1.08	.0002	:45	26.7	.0045	:03	66.6	.0113	5:00	4.01	.0007
:30	1.08	.0002	:50	28.4	.0048	:05	66.2	.0112	6:00	3.43	.0006
:35	1.08	.0002	:55	28.7	.0049	:10	66.2	.0112	7:00	3.04	.0005
:40	1.11	.0002	3:00	28.4	.0048	:12	66.9	.0113	8:00	2.72	.0005
:45	1.14	.0002	:05	28.4	.0048	:15	66.6	.0113	9:00	2.36	.0004
:50	1.14	.0002	:10	28.4	.0048	:20	65.5	.0111	10:00	2.02	.0003
:55	1.14	.0002	:15	28.4	.0048	:25	65.2	.0110	11:00	1.77	.0003
11:00	1.18	.0002	:20	28.4	.0048	:27	64.1	.0108	12:00	1.54	.0003
:05	1.22	.0002	:25	28.7	.0049	:30	64.4	.0109			
:10	1.25	.0002	:30	29.0	.0049						

TABLE 36.—Run-off from watershed J for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.34 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.59 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.59 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.59 INCHES—Con.		
Dec. 24			Jan. 23			Jan. 23			Jan. 23		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.
1:00	1.33	0.0002	5:40	268	0.0453	1:00	672	0.114	10:15	115	0.0194
2:00	1.18	.0002	:45	277	.0469	:05	660	.112	:20	110	.0186
3:00	.985	.0002	:50	286	.0484	:10	648	.110	:25	106	.0179
4:00	.882	.0001	:55	295	.0499	:15	639	.108	:30	105	.0177
5:00	.812	.0001	6:00	304	.0514	:20	628	.106	:35	104	.0176
6:00	.706	.0001	:05	312	.0528	:25	620	.105	:40	100	.0169
7:00	.648	.0001	:10	320	.0541	:30	610	.103	:45	99.0	.0168
8:00	.580	.0001	:15	328	.0555	:35	599	.101	11:00	94.6	.0160
9:00	.534	.0001	:20	338	.0572	:40	589	.0996	:15	94.0	.0159
10:00	.466	.0001	:25	347	.0587	:45	577	.0976	:30	81.4	.0138
11:00	.428	.0001	:30	355	.0601	:50	567	.0959	:35	82.2	.0139
12:00	.393	.0001	:35	363	.0614	:55	559	.0946	:40	81.5	.0138
			:40	373	.0631	2:00	550	.0931	:45	79.5	.0135
p. m.			:45	383	.0648	:05	543	.0919	:50	78.2	.0132
1:00	.372	.0001	:50	395	.0668	:10	534	.0904	:55	77.8	.0132
2:00	.361	.0001	:55	406	.0687	:15	526	.0890	12:00	78.0	.0132
4:00	.321	T	7:00	421	.0712	:20	516	.0873			
6:00	.278	T	:05	427	.0722	:25	508	.0860			
8:00	.262	T	:10	438	.0741	:30	499	.0844			
10:00	.240	T	:15	448	.0758	:35	492	.0832			
12:00	.232	T	:20	457	.0773	:40	483	.0817	Jan. 24		
			:25	467	.0790	:45	478	.0809	a. m.		
			:30	477	.0807	:50	465	.0787	12:15	75.0	.0127
			:35	486	.0822	:55	455	.0770	:30	70.3	.0119
			:40	497	.0841	3:00	449	.0760	:45	66.2	.0112
			:45	507	.0858	:05	442	.0748	1:00	64.3	.0109
			:50	518	.0876	:10	434	.0734	:15	60.0	.0102
			:55	527	.0892	:15	427	.0722	:30	55.6	.0094
			8:00	533	.0902	:20	421	.0712	:35	53.4	.0090
			:05	545	.0922	:25	413	.0699	:40	53.4	.0090
			:10	552	.0934	:30	407	.0689	:45	52.0	.0088
			:15	562	.0951	:35	402	.0680	2:00	51.5	.0087
			:20	573	.0970	:40	398	.0673	:15	50.0	.0085
			:25	580	.0981	:45	391	.0662	:30	47.0	.0080
			:30	594	.100	:50	386	.0653	:45	43.5	.0074
			:35	606	.102	:55	379	.0641	3:00	41.2	.0070
			:40	617	.104	4:00	374	.0633	:15	38.8	.0066
			:45	629	.106	:05	369	.0624	:30	36.8	.0062
			:50	640	.108	:10	365	.0618	:45	34.8	.0059
			:55	652	.110	:15	360	.0609	4:00	33.3	.0056
			9:00	665	.112	:20	356	.0602	:15	31.8	.0054
			:05	648	.116	:25	350	.0592	:30	30.3	.0051
			:10	700	.118	:30	347	.0587	:45	29.0	.0049
			:15	716	.121	:35	344	.0582	:50	28.5	.0048
			:20	735	.124	:40	339	.0578	5:00	27.6	.0047
			:25	750	.127	:45	336	.0568	:15	27.0	.0046
			:30	765	.129	:50	333	.0563	:30	26.0	.0044
			:35	780	.132	:55	330	.0558	:45	25.0	.0042
			:40	788	.133	5:00	326	.0552	6:00	24.0	.0041
			:45	798	.135	:05	322	.0545	:30	22.6	.0038
			:50	816	.138	:10	319	.0540	7:00	21.0	.0036
			:55	835	.141	:15	315	.0533	:30	19.5	.0033
			10:00	847	.143	:20	311	.0526	8:00	18.3	.0031
			:05	854	.144	:25	308	.0521	:30	16.9	.0028
			:10	866	.145	:30	303	.0513	:45	15.8	.0027
			:15	859	.145	:35	300	.0508	9:00	14.9	.0025
			:20	861	.146	:40	296	.0501	:30	14.0	.0024
			:25	861	.146	:45	293	.0496	10:00	13.1	.0022
			:30	862	.146	:50	292	.0494	:30	12.5	.0021
			:35	862	.146	:55	286	.0484	11:00	11.4	.0019
			:40	861	.146	6:00	280	.0474	12:00	11.0	.0019
			:45	860	.146	:10	273	.0462			
			:50	860	.146	:15	265	.0448	p. m.		
			:55	859	.145	:20	258	.0436	12:30	10.2	.0017
			11:00	858	.145	:30	252	.0426	:10	9.60	.0016
			:05	855	.145	:40	246	.0416	:30	9.06	.0015
			:10	851	.144	:50	240	.0406	2:00	8.42	.0014
			:15	846	.143	7:00	234	.0396	:30	7.92	.0013
			:20	840	.142	:10	229	.0387	:45	7.55	.0013
			:25	833	.141	:20	223	.0377	3:00	7.20	.0012
			:30	827	.140	:30	218	.0360	:40	6.85	.0012
			:35	820	.139	:40	212	.0350	4:00	6.54	.0011
			:40	814	.138	:50	207	.0340	:50	6.18	.0010
			:45	807	.136	8:00	201	.0335	6:00	5.58	.0009
			:50	799	.135	:10	198	.0328	7:00	5.11	.0009
			:55	792	.134	:15	194	.0325	8:00	4.75	.0008
			12:00	784	.133	:20	192	.0325	9:00	4.32	.0007
						:30	185	.0313	10:00	3.94	.0007
						:40	184	.0311	11:00	3.64	.0006
						:50	182	.0308	12:00	3.36	.0006
						9:00	178	.0297			
						:15	158	.0267	Jan. 25		
						:20	152	.0256	a. m.		
						:30	146	.0247	1:00	3.04	.0005
						:35	140	.0238	2:00	2.78	.0005
						:40	120	.0236	3:00	2.53	.0004
						:45	136	.0229	4:00	2.30	.0004
						:50	130	.0220	5:00	2.08	.0004
						:55	129	.0218	6:00	1.87	.0003
						10:00	125	.0212	7:00	1.77	.0003

TABLE 36.—*Run-off from watershed J for selected storms, 1737-39—Continued*

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF JAN. 3, 1938, TOTAL RAINFALL 2.59 INCHES—Con.			STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.47 INCHES—Con.			STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.47 INCHES—Con.			STORM OF MAR. 27, 1938, TOTAL RAINFALL 1.12 INCHES—Con.		
Jan. 25			Feb. 16			Feb. 17.			Mar. 27		
a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.
8:00-----	1.68	0.0003	1.4551	4:20-----	124	0.0210	0.0105	7:00-----	9.87	0.0017	0.2361
9:00-----	1.50	.0002	1.4553	:25-----	147	.0249	.0124	:30-----	9.20	.0016	.2369
10:00-----	1.33	.0002	1.4555	:30-----	182	.0308	.0170	8:00-----	8.54	.0014	.2377
11:00-----	1.22	.0002	1.4557	:40-----	197	.0333	.0197	:30-----	8.04	.0014	.2384
12:00-----	1.11	.0002	1.4559	:45-----	208	.0352	.0225	9:00-----	7.43	.0012	.2390
p. m.				:50-----	218	.0369	.0255	:30-----	6.96	.0012	.2396
1:00-----	1.04	.0002	1.4561	:55-----	233	.0394	.0287	10:00-----	6.54	.0011	.2402
2:00-----	.958	.0002	1.4563	5:00-----	243	.0411	.0321	11:00-----	5.68	.0010	.2412
3:00-----	.882	.0001	1.4565	:05-----	253	.0428	.0356	12:00-----	4.93	.0008	.2421
4:00-----	.812	.0001	1.4566	:10-----	262	.0443	.0392	p. m.			
5:00-----	.747	.0001	1.4567	:15-----	270	.0457	.0430	1:00-----	4.32	.0007	.2429
6:00-----	.706	.0001	1.4568	:20-----	279	.0472	.0469	2:00-----	3.86	.0006	.2435
7:00-----	.630	.0001	1.4569	:25-----	285	.0482	.0509	3:00-----	3.43	.0006	.2441
8:00-----	.577	.0001	1.4570	:30-----	290	.0491	.0549	4:00-----	3.17	.0005	.2447
9:00-----	.544	.0001	1.4571	:35-----	295	.0499	.0590	5:00-----	2.98	.0005	.2452
10:00-----	.520	.0001	1.4572	:40-----	300	.0508	.0632	6:00-----	2.78	.0005	.2457
11:00-----	.479	.0001	1.4573	:45-----	304	.0514	.0675	7:00-----	2.66	.0004	.2461
12:00-----	.453	.0001	1.4574	:50-----	307	.0519	.0718	8:00-----	2.47	.0004	.2465
Jan. 26				:55-----	311	.0526	.0762	9:00-----	2.20	.0004	.2469
a. m.				6:00-----	312	.0528	.0806	:30-----	2.34	.0004	.2471
1:00-----	.416	.0001	1.4575	:05-----	312	.0528	.0894	:35-----	2.19	.0004	
2:00-----	.404	.0001	1.4576	:10-----	310	.0524	.0938	:40-----	2.19	.0004	
3:00-----	.382	.0001	1.4577	:15-----	310	.0524	.0982	:45-----	2.19	.0004	
4:00-----	.361	.0001	1.4578	:20-----	309	.0523	.1026	:50-----	2.19	.0004	.2472
5:00-----	.350	.0001	1.4579	:25-----	309	.0521	.1070	:55-----	2.14	.0004	
6:00-----	.340	.0001	1.4580	:30-----	303	.0513	.1113	10:00-----	2.14	.0004	
7:00-----	.330	T		:35-----	300	.0508	.1155	:05-----	2.14	.0004	.2473
8:00-----	.321	T	1.4581	:40-----	294	.0497	.1197	:10-----	2.08	.0004	
9:00-----	.303	T		:45-----	290	.0491	.1238	:15-----	2.08	.0004	
10:00-----	.286	T	1.4582	:50-----	283	.0479	.1278	:20-----	2.08	.0004	.2474
11:00-----	.278	T		:55-----	276	.0467	.1317	:25-----	2.08	.0004	
12:00-----	.255	T	1.4583	7:00-----	268	.0453	.1355	:30-----	2.08	.0004	
p. m.				:05-----	260	.0440	.1392	:35-----	2.02	.0003	
1:00-----	.248	T		:10-----	253	.0428	.1428	:40-----	2.02	.0003	.2475
2:00-----	.233	T	1.4584	:15-----	246	.0416	.1463	:45-----	2.02	.0003	
3:00-----	.220	T	1.4585	:20-----	232	.0392	.1530	:50-----	2.02	.0003	
4:00-----	.207	T	1.4586	:30-----	215	.0364	.1593	:55-----	2.02	.0003	.2476
5:00-----	.196	T		:40-----	198	.0355	.1654	11:00-----	2.02	.0003	
6:00-----	.184	T	1.4587	:50-----	182	.0308	.1709	:03-----	2.02	.0003	
7:00-----				:00-----	167	.0282	.1757	:05-----	2.08	.0004	
8:00-----				:05-----	157	.0266	.1780	:10-----	2.14	.0004	
9:00-----				:10-----	149	.0252	.1802	11:12-----	2.84	.0005	.2477
10:00-----				:15-----	141	.0238	.1822	STORM OF MAR. 27, 1938, TOTAL RAINFALL 1.12 INCHES			
11:00-----				:20-----	133	.0225	.1841	Mar. 26			
12:00-----				:25-----	127	.0215	.1859	p. m.			
1:00-----				:30-----	120	.0203	.1876	12:00-----	0.009	T	
2:00-----				:35-----	110	.0186	.1892	Mar. 27			
3:00-----				:40-----	107	.0181	.1907	a. m.			
4:00-----				:45-----	98.0	.0166	.1921	4:00-----	.019	T	
5:00-----				:50-----	88.8	.0150	.1934	8:00-----	.025	T	
6:00-----				:55-----	84.8	.0143	.1946	12:00-----	.130	T	
7:00-----				:00-----	82.4	.0139	.1958	p. m.			
8:00-----				:05-----	76.8	.0130	.1969	12:25-----	.134	T	.10
9:00-----				:10-----	72.3	.0122	.1979	:27-----	.163	T	
10:00-----				:15-----	65.5	.0111	.1989	:28-----	.278	T	
11:00-----				:20-----	62.7	.0106	.1994	:29-----	.672	0.0001	
12:00-----				:25-----	64.8	.0110	.1998	:30-----	1.37	.0002	
1:00-----				:30-----	59.4	.0100	.2007	:31-----	3.30	.0006	
2:00-----				:35-----	55.8	.0094	.2015	:32-----	8.54	.0014	
3:00-----				:40-----	53.8	.0091	.2023	:33-----	11.6	.0020	
4:00-----				:45-----	51.6	.0087	.2030	:35-----	11.8	.0020	.0001
5:00-----				:50-----	48.9	.0083	.2037	:40-----	13.6	.0023	.0003
6:00-----				:55-----	45.7	.0077	.2044	:45-----	16.0	.0027	.0005
7:00-----				:00-----	43.4	.0073	.2050	:48-----	21.8	.0037	.0007
8:00-----				:05-----	43.4	.0073	.2056	:50-----	23.4	.0040	.0008
9:00-----				:10-----	42.0	.0069	.2068	:52-----	40.2	.0068	.0010
10:00-----				:15-----	39.2	.0066	.2080	:54-----	51.6	.0087	.0012
11:00-----				:20-----	34.2	.0058	.2111	:55-----	52.4	.0089	.0013
12:00-----				:25-----	30.6	.0052	.2139	:00-----	55.8	.0094	.0015
1:00-----				:30-----	27.5	.0046	.2163	:05-----	60.5	.0102	.0018
2:00-----				:35-----				:10-----	61.6	.0104	.0021
3:00-----				:40-----				:15-----	62.7	.0106	.0023
4:00-----				:45-----				:20-----	61.9	.0105	.0025
5:00-----				:50-----				:25-----	61.2	.0104	.0027
6:00-----				:55-----				:30-----	61.9	.0105	.0029
7:00-----				:00-----				:35-----	63.8	.0108	.0031
8:00-----				:05-----				:40-----	64.4	.0109	.0033
9:00-----				:10-----				:45-----	66.6	.0113	.0035
10:00-----				:15-----							
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2:00-----				:35-----							
3:00-----				:40-----							
4:00-----				:45-----							
5:00-----				:50-----							
6:00-----				:55-----							</

TABLE 36.—Run-off from watershed J for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.01 INCHES—Con.			STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.01 INCHES—Con.			STORM OF APRIL 14-15, 1938, TOTAL RAINFALL 2.42 INCHES—Con.			STORM OF APRIL 14-15, 1938, TOTAL RAINFALL 2.42 INCHES—Con.		
Mar. 28			Mar. 29			Apr. 15			Apr. 15		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>
4:55	55.8	0.0094	10:00	8.93	0.0015	12:20	0.028		11:15	177	0.0299
5:00	60.5	0.0102	11:00	8.42	0.0014	1:00	0.024	T	12:00	187	0.0316
5:15	73.7	0.0125	11:30	7.67	0.0013	1:05	0.025	T	12:05	194	0.0328
5:30	87.6	0.0148	12:00	7.31	0.0012	1:10	0.030	T	12:10	202	0.0342
5:45	94.4	0.0160		6.85	0.0012	1:15	0.035	T	12:15	210	0.0355
6:00	100	0.0169				1:20	0.036	T	12:20	217	0.0367
6:15	112	0.0190	<i>p. m.</i>			1:25	0.047	T	12:25	225	0.0381
6:30	120	0.0203	1:00	5.97	0.0010	1:30	0.049	T	12:30	233	0.0394
6:45	128	0.0216	2:00	5.20	0.0009	1:35	0.051	T	12:35	242	0.0409
7:00	137	0.0232	3:00	4.49	0.0008	1:40	0.055	T	12:40	247	0.0418
7:15	144	0.0244	4:00	4.01	0.0007	1:45	0.060	T			
7:30	151	0.0255	5:00	3.64	0.0006	1:50	0.062	T			
7:45	158	0.0267	6:00	3.30	0.0006	1:55	0.065	T	<i>p. m.</i>		
8:00	165	0.0279	7:00	2.98	0.0005	2:00	0.070	T	12:05	254	0.0430
8:15	172	0.0291	8:00	2.78	0.0005	2:05	0.075	T	12:10	259	0.0438
8:30	181	0.0305	9:00	2.53	0.0004	2:10	0.084	T	12:15	265	0.0448
8:45	188	0.0318	10:00	2.30	0.0004	2:15	0.093	T	12:20	268	0.0453
9:00	202	0.0342	11:00	2.08	0.0004	2:20	0.100	T	12:25	273	0.0462
9:15	205	0.0347	12:00	1.87	0.0002	2:25	0.107	T	12:30	277	0.0466
9:30	213	0.0360				2:30	0.114	T	12:35	280	0.0474
9:45	219	0.0370	Mar. 30			2:35	0.122	T	12:40	284	0.0480
10:00	228	0.0386	<i>a. m.</i>			2:40	0.130	T	12:45	287	0.0486
10:15	238	0.0403	1:00	1.72	0.0003	2:45	0.144	T	12:50	290	0.0491
10:30	246	0.0416	2:00	1.54	0.0003	2:50	0.153	T	12:55	293	0.0496
10:45	255	0.0431	3:00	1.50	0.0002	2:55	0.158	T	1:00	298	0.0504
11:00	262	0.0443	4:00	1.41	0.0002	3:00	0.163	T	1:05	301	0.0509
11:15	270	0.0457	5:00	1.33	0.0002	3:05	0.174	T	1:10	303	0.0513
11:30	279	0.0472	6:00	1.25	0.0002	3:10	0.190	T	1:15	306	0.0518
11:45	287	0.0486	7:00	1.18	0.0002	3:15	0.213	T	1:20	309	0.0523
12:00	292	0.0494	8:00	1.08	0.0002	3:20	0.220	T	1:25	312	0.0528
12:15	298	0.0504	9:00	1.01	0.0002	3:25	0.226	T	1:30	314	0.0531
12:30	304	0.0514	10:00			3:30	0.232	T	1:35	317	0.0536
12:45	310	0.0524	<i>p. m.</i>			3:35	0.240	T	1:40	320	0.0541
12:55	316	0.0535	1:00	.932	0.0002	3:40	0.246	T	1:45	323	0.0546
1:00	322	0.0545	2:00	.858	0.0001	3:45	0.255	T	1:50	325	0.0550
1:05	325	0.0550	3:00	.812	0.0001	3:50	0.260	T	1:55	327	0.0553
1:10	328	0.0555	4:00	.747	0.0001	3:55	0.270	T	2:00	331	0.0560
1:15	337	0.0570	5:00	.706	0.0001	4:00	0.283	T	2:05	333	0.0563
1:20	344	0.0582	6:00	.667	0.0001	4:05	0.293	T	2:10	335	0.0567
1:25	348	0.0589	7:00			4:10	0.303	T	2:15	337	0.0570
1:30	351	0.0594	8:00			4:15	0.321	T	2:20	340	0.0575
1:35	351	0.0594	9:00			4:20	0.312	T	2:25	344	0.0582
1:40	348	0.0589	10:00			4:25	0.312	T	2:30	347	0.0587
1:45	342	0.0579	11:00			4:30	0.303	T	2:35	349	0.0590
1:50	335	0.0567	12:00			4:35	0.294	T	2:40	352	0.0596
1:55	320	0.0541	<i>a. m.</i>			4:40	0.294	T	2:45	355	0.0601
2:00	308	0.0521	2:00	.648	0.0001	4:45	0.312	T	2:50	357	0.0604
2:05	293	0.0496	3:00	.612	0.0001	4:50	0.340	T	2:55	362	0.0612
2:10	277	0.0469	4:00	.780	0.0001	4:55	0.404	0.0001	3:00	363	0.0614
2:15	260	0.0440	5:00	.564	0.0001	5:00	0.453	0.0001	3:05	367	0.0621
			6:00	.549	0.0001	5:05	0.534	0.0001	3:10	370	0.0626
			7:00	.520	0.0001	5:10	0.534	0.0001	3:15	372	0.0629
			8:00			5:15	0.534	0.0001	3:20	374	0.0633
			9:00			5:20	0.534	0.0001	3:25	377	0.0638
			10:00			5:25	0.534	0.0001	3:30	379	0.0641
			11:00			5:30	0.534	0.0001	3:35	382	0.0646
			12:00			5:35	0.534	0.0001	3:40	386	0.0653
						5:40	0.534	0.0001	3:45	389	0.0658
						5:45	0.534	0.0001	3:50	392	0.0663
						5:50	0.534	0.0001	3:55	398	0.0673
						5:55	0.534	0.0001	4:00	402	0.0680
						6:00	0.534	0.0001	4:05	409	0.0692
						6:05	0.534	0.0001	4:10	415	0.0702
						6:10	0.534	0.0001	4:15	422	0.0714
						6:15	0.534	0.0001	4:20	430	0.0728
						6:20	0.534	0.0001	4:25	440	0.0744
						6:25	0.534	0.0001	4:30	448	0.0758
						6:30	0.534	0.0001	4:35	453	0.0766
						6:35	0.534	0.0001	4:40	464	0.0785
						6:40	0.534	0.0001	4:45	469	0.0794
						6:45	0.534	0.0001	4:50	476	0.0805
						6:50	0.534	0.0001	4:55	481	0.0814
						6:55	0.534	0.0001	5:00	486	0.0822
						7:00	0.534	0.0001	5:05	490	0.0829
						7:05	0.534	0.0001	5:10	494	0.0836
						7:10	0.534	0.0001	5:15	498	0.0843
						7:15	0.534	0.0001	5:20	501	0.0848
						7:20	0.534	0.0001	5:25	504	0.0853
						7:25	0.534	0.0001	5:30	507	0.0858
						7:30	0.534	0.0001	5:35	511	0.0865
						7:35	0.534	0.0001	5:40	512	0.0866
						7:40	0.534	0.0001	5:45	513	0.0868
						7:45	0.534	0.0001	5:50	513	0.0868
						7:50	0.534	0.0001	5:55	514	0.0870
						7:55	0.534	0.0001	6:00	514	0.0870
						8:00	0.534	0.0001	6:05	513	0.0868
						8:05	0.534	0.0001	6:10	513	0.0868
						8:10	0.534	0.0001	6:15	513	0.0868
						8:15	0.534	0.0001	6:20	512	0.0866
						8:20	0.534	0.0001	6:25	510	0.0863
						8:25	0.534	0.0001	6:30	505	0.0854
						8:30	0.534	0.0001	6:35		
						8:35	0.534	0.0001	6:40		
						8:40	0.534	0.0001	6:45		
						8:45	0.534	0.0001	6:50		
						8:50	0.534	0.0001	6:55		
						8:55	0.534	0.0001	7:00		
						9:00	0.534	0.0001	7:05		
						9:05	0.534	0.0001	7:10		
						9:10	0.534	0.0001	7:15		
						9:15	0.534	0.0001	7:20		
						9:20	0.534	0.0001	7:25		
						9:25	0.534	0.0001	7:30		
						9:30	0.534	0.0001	7:35		
						9:35	0.534	0.0001	7:40		
						9:40	0.534	0.0001	7:45		
						9:45	0.534	0.0001	7:50		
						9:50	0.534	0.0001	7:55		
						9:55	0.534	0.0001	8:00		
						10:00	0.534	0.0001	8:05		
						10:05	0.534	0.0001	8:10		
						10:10	0.534	0.0001	8:15		
						10:15	0.534	0.0001	8:20		
						10:20	0.534	0.0001	8:25		
						10:25	0.534	0.0001	8:30		
						10:30	0.534	0.0001	8:35		
						10:35	0.534	0.0001	8:40		
						10:40	0.534	0.0001	8:45		
						10:45	0.534	0.0001	8:50		
						10:50	0.534	0.0001	8:55		
						10:55	0.534	0.0001	9:00		
						11:00	0.534	0.0001	9:05		
						11:05	0.534	0.0001	9:10		
						11:10	0.534	0.0001	9:15		
						11:15	0.534	0.0001	9:20		
						11:20	0.534	0.0001	9:25		
						11:25	0.534	0.0001	9:30		
						11:30	0.534	0.0001	9:35		

TABLE 36.—Run-off from watershed J for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.42 INCHES—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.42 INCHES—Con.			STORM OF MAY 17, 1939, A. M. TOTAL RAINFALL 0.81 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.44 INCH		
Apr. 15			Apr. 17			May 17			May 18		
<i>p. m.</i>	<i>Sec. ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>
6:55	500	0.0846	9:00	0.286	0.7827	11:30	73.4	0.0124	6:30	7.99	0.0014
7:00	490	0.0829	10:00	.270	T	35	75.4	.0128	6:55	7.13	.0012
7:15	473	0.0800	11:00	.255	T	45	66.9	.0113	7:00	8.12	.0014
7:30	456	0.0772	12:00	.240	T	12:00	58.2	.0098	7:05	10.8	.0018
7:45	436	0.0738							7:10	17.2	.0029
8:00	414	0.0700							7:15	26.2	.0044
8:05	404	0.0684	2:00	.213	T	12:30	42.4	.0072	7:18	48.0	.0081
8:15	387	0.0655	4:00	.190	T	1:00	38.8	.0066	7:20	56.8	.0096
8:25	367	0.0621	6:00	.179	T	1:05	31.6	.0053	7:24	63.4	.0107
8:35	346	0.0585	8:00	.163	T	1:10	31.1	.0053	7:25	66.2	.0112
8:45	324	0.0548	10:00	.153	T	1:15	30.2	.0051	7:30	80.0	.0135
8:55	305	0.0516	12:00	.139	T	1:30	29.8	.0050	7:35	95.9	.0162
9:05	288	0.0487				1:45	31.6	.0053	7:40	117	.0198
9:15	271	0.0458	Apr. 18			2:00	25.2	.0043	7:45	132	.0224
9:25	254	0.0430	<i>a. m.</i>			2:30	23.3	.0039	7:50	150	.0253
9:35	237	0.0401	2:00	.130	T	2:45	21.2	.0036	7:55	188	.0317
9:45	224	0.0379	4:00	.122	T	3:00	20.7	.0035	8:00	222	.0376
9:55	207	0.0350	6:00	.114	T	3:05	20.0	.0034	8:05	252	.0427
10:05	193	0.0326	8:00	.107	T	3:10	26.8	.0037	8:10	280	.0475
10:15	178	0.0301	10:00	.104	T	3:15	21.5	.0036	8:15	289	.0489
10:25	165	0.0279	12:00	.096	T	3:30	18.7	.0032	8:20	270	.0457
10:35	154	0.0260				4:00	15.7	.0026	8:23	238	.0404
10:45	142	0.0240	<i>p. m.</i>			4:30	14.1	.0024	8:25	220	.0372
10:55	132	0.0223	2:00	.093	T	5:00	12.9	.0022	8:27	206	.0348
11:05	121	0.0205	4:00	.087	T	5:30	11.7	.0020	8:30	202	.0342
11:15	109	0.0185	6:00	.084	T	6:00	11.0	.0019	8:35	201	.0340
11:25	99.7	0.0169	8:00	.081	T	6:30	10.3	.0017	8:40	200	.0339
11:35	90.1	0.0152	10:00	.078	T	7:00	9.96	.0017	8:45	200	.0338
11:45	83.0	0.0140	12:00	.075	T	7:30	9.47	.0016	8:50	196	.0332
11:55	75.4	0.0128				8:00	8.99	.0015	8:53	192	.0326
12:00	72.0	0.0122				8:30	8.84	.0015	8:55	190	.0321
Apr. 16			STORM OF MAY 17, 1939, A. M. TOTAL RAINFALL 0.81 INCH			STORM OF MAY 17, 1939, P. M. TOTAL RAINFALL 0.36 INCH			9:00	182	.0307
<i>a. m.</i>			May 17			May 17			9:05	173	.0293
12:10	69.3	.0117	<i>a. m.</i>			<i>p. m.</i>			9:10	164	.0278
12:20	60.5	.0102	6:14	0.270	T	8:30	8.84	.0015	9:15	155	.0263
12:30	55.2	.0093	6:21	.270	T	8:35	9.00	.0015	9:20	147	.0248
12:40	51.7	.0087	6:28	.255	0	8:40	9.15	.0016	9:25	138	.0234
12:50	47.8	.0081	6:30	.370	.0001	8:45	9.30	.0016	9:30	130	.0220
1:00	45.7	.0077	6:33	.515	.0001	8:50	9.46	.0006	9:35	124	.0209
1:05	41.0	.0069	6:35	.776	.0001	8:55	9.63	.0016	9:40	117	.0198
1:15	38.5	.0065	6:37	1.14	.0002	9:00	9.80	.0016	9:45	112	.0190
1:20	35.4	.0060	6:40	1.96	.0003	9:05	9.63	.0016	9:50	108	.0182
1:25	34.6	.0058	6:43	2.19	.0004	9:10	9.96	.0017	9:55	104	.0177
1:30	31.0	.0052	6:45	2.02	.0003	9:15	10.6	.0018	10:00	102	.0172
1:35	27.6	.0047	6:48	1.76	.0003	9:20	11.2	.0019	10:05	100	.0169
1:40	24.9	.0042	6:50	2.31	.0004	9:25	12.5	.0021	10:10	98.5	.0167
1:45	22.0	.0037	6:53	4.48	.0008	9:30	14.1	.0024	10:15	96.8	.0164
1:50	19.8	.0034	6:55	5.25	.0009	9:35	15.8	.0027	10:20	93.5	.0158
1:55	16.9	.0028	6:58	8.68	.0015	9:40	16.2	.0027	10:25	88.0	.0149
2:00	14.7	.0025	7:00	13.1	.0022	9:45	17.7	.0032	10:30	84.0	.0142
2:05	13.1	.0022	7:03	17.7	.0030	9:50	18.7	.0032	10:35	82.0	.0139
2:10	11.6	.0020	7:05	23.0	.0039	9:55	19.3	.0032	10:40	80.0	.0135
2:15	10.2	.0018	7:08	27.7	.0047	10:00	19.8	.0034	10:45	78.6	.0133
2:20	9.33	.0016	7:10	35.1	.0059	10:05	19.8	.0034	10:50	76.7	.0130
2:25	8.04	.0014	7:13	43.2	.0073	10:10	22.8	.0038	10:55	72.2	.0122
2:30	7.31	.0012	7:15	53.6	.0091	10:15	20.4	.0034	11:00	67.6	.0114
2:35	6.45	.0011	7:18	62.0	.0105	10:20	20.4	.0034	11:05	63.4	.0107
2:40	5.77	.0010	7:20	65.5	.0111	10:25	19.8	.0034	11:10	59.0	.0100
2:45	5.20	.0009	7:23	71.6	.0121	10:30	20.9	.0035	11:15	52.8	.0089
2:50	4.66	.0008	7:25	76.7	.0130	10:35	20.4	.0034			
2:55	4.16	.0007	7:28	78.0	.0132	10:40	20.1	.0034	<i>p. m.</i>		
3:00	3.86	.0006	7:30	78.6	.0133	10:45	19.8	.0034	12:15	49.6	.0084
3:05	3.57	.0006	7:33	79.3	.0134	10:50	18.5	.0032	12:20	44.8	.0076
			7:35	74.8	.0126	10:55	19.8	.0034	12:25	40.2	.0068
			7:38	71.6	.0121	11:00	19.8	.0034	12:30	37.5	.0063
			7:40	69.6	.0118	11:05	22.4	.0038	12:35	32.0	.0054
			7:43	63.4	.0107				12:40	26.9	.0046
			7:45	63.4	.0107	May 18			12:45	23.6	.0040
			7:48	73.4	.0124	<i>a. m.</i>			12:50	20.7	.0035
			7:50	73.4	.0124	12:30	26.0	.0044	12:55	17.7	.0030
			7:53	67.6	.0114	1:00	27.9	.0047	1:00	15.3	.0026
			7:55	63.4	.0107	1:05	26.9	.0046	1:05	11.7	.0020
			7:58	58.2	.0098	1:10	25.4	.0043	1:10	10.6	.0018
			8:00	55.2	.0093	1:15	22.8	.0038	1:15	8.99	.0015
			8:03	63.4	.0107	1:20	20.4	.0034	1:20	7.61	.0013
			8:05	82.6	.0140	1:25	16.5	.0028	1:25	6.67	.0011
			8:08	86.4	.0146	1:30	12.1	.0020	1:30	5.63	.0010
			8:10	81.9	.0139	1:35	9.30	.0016	1:35	5.25	.0009
			8:13	80.0	.0135	1:40	7.99	.0014	1:40	4.68	.0008
			8:15	63.4	.0107	1:45	7.66	.0013	1:45	4.28	.0007
			8:18	63.4	.0107	1:50	7.37	.0012	1:50	3.91	.0007
			8:20	63.4	.0107	1:55	7.13	.0012	1:55	3.56	.0006
									2:00	3.25	.0005
									2:05	2.69	.0004
									2:10	2.37	.0004
									May 19		
									<i>a. m.</i>		
									12:05	2.31	.0004

TABLE 36.—Run-off from watershed J for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off		Date and time	Discharge	Accu- mu- lated run-off		Date and time	Discharge	Accu- mu- lated run-off		Date and time	Discharge	Accu- mu- lated run-off	
STORM OF MAY 18, 1939, TOTAL RAINFALL 0.44 INCH—Con.				STORM OF MAY 20, 1939, TOTAL RAINFALL 0.84 INCH—Con.				STORM OF MAY 20, 1939, TOTAL RAINFALL 0.84 INCH—Con.				STORM OF MAY 20, 1939, TOTAL RAINFALL 0.84 INCH—Con.			
May 19				May 20				May 20				May 20			
a. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.
12:10-----	2.25	0.0004		1:15-----	1.04	0.0002		4:00-----	228	0.0387	0.0843	4:00-----	11.9	0.0020	0.2439
:30-----	2.19	.0004	0.1292	:20-----	1.47	.0002		:30-----	224	.0380	.1034	5:00-----	8.68	.0015	.2457
1:00-----	2.02	.0003	.1294	:22-----	2.31	.0004		:40-----	222	.0376	.1097	6:00-----	6.90	.0012	.2470
2:00-----	1.71	.0003	.1297	:23-----	2.82	.0005		:50-----	214	.0362	.1159	7:00-----	5.63	.0010	.2481
3:00-----	1.52	.0002	.1300	:24-----	3.64	.0006		5:00-----	203	.0344	.1219	8:00-----	4.58	.0008	.2489
4:00-----	1.30	.0002	.1303	:25-----	4.87	.0008		:15-----	191	.0323	.1303	9:00-----	3.91	.0007	.2496
5:00-----	1.14	.0002	.1305	:26-----	6.67	.0011		:30-----	176	.0299	.1380	10:00-----	3.25	.0005	.2503
6:00-----	1.07	.0002	.1306	:27-----	10.6	.0018	0.0001	:45-----	161	.0272	.1452	11:00-----	2.89	.0005	.2508
7:00-----	.930	.0002	.1308	:28-----	14.5	.0024		6:00-----	149	.0253	.1517	12:00-----	2.50	.0004	.2512
8:00-----	.803	.0001	.1310	:29-----	19.2	.0032	.0002	:15-----	140	.0237	.1579	May 21			
9:00-----	.624	.0001	.1311	:30-----	20.7	.0035		:30-----	131	.0222	.1636	a. m.			
10:00-----	.698	.0001	.1312	:32-----	28.1	.0048	.0003	:45-----	123	.0209	.1690	1:00-----	2.13	.0004	.2516
12:00-----	.604	.0001	.1314	:35-----	37.5	.0063	.0006	7:00-----	111	.0188	.1740	2:00-----	1.91	.0003	.2520
				:40-----	52.8	.0089	.0013	:15-----	98.3	.0166	.1784	3:00-----	1.71	.0003	.2523
				:45-----	63.4	.0107	.0021	:30-----	95.9	.0162	.1825	4:00-----	1.56	.0003	.2525
p. m.				:50-----	78.0	.0132	.0031	:45-----	99.5	.0168	.1866	6:00-----	1.22	.0002	.2530
3:00-----	.472	.0001	.1317	:55-----	93.5	.0158	.0043	8:00-----	95.9	.0162	.1908	8:00-----	1.04	.0002	.2534
6:00-----	.350	.0001	.1319	2:00-----	110	.0186	.0057	:15-----	72.8	.0123	.1943	10:00-----	.833	.0001	.2537
12:00-----	.200	T	.1322	:05-----	131	.0222	.0074	:30-----	67.6	.0114	.1973	12:00-----	.624	.0001	.2540
				:10-----	159	.0270	.0095	:45-----	64.8	.0110	.2001	p. m.			
May 20				:15-----	195	.0330	.0120	9:00-----	63.4	.0107	.2028	2:00-----	.604	.0001	.2542
a. m.				:20-----	251	.0426	.0151	:30-----	60.5	.0102	.2081	6:00-----	.430	.0001	.2545
1:00-----	.278	T	.1322	:25-----	298	.0504	.0190	10:00-----	56.0	.0095	.2130	10:00-----	.296	T	.2548
				:28-----	304	.0515	.0215	:30-----	52.0	.0088	.2176	12:00-----	.262	T	.2549
				:30-----	290	.0491	.0232	11:00-----	48.8	.0082	.2218	May 22			
				:32-----	261	.0442	.0248	:30-----	43.2	.0073	.2257	a. m.			
				:35-----	255	.0432	.0270	12:00-----	36.3	.0061	.2291	4:00-----	.186	T	.2550
				:40-----	251	.0425	.0305	p. m.				6:00-----	.173	T	.2551
				:45-----	249	.0422	.0341	12:30-----	32.0	.0054	.2320	12:00-----	.115	T	.2552
				:50-----	248	.0420	.0376	1:00-----	27.3	.0046	.2345	p. m.			
				:55-----	246	.0417	.0411	:30-----	23.6	.0040	.2366	6:00-----	.0605	T	.2553
				3:00-----	243	.0413	.0445	:30-----	20.7	.0035	.2385	12:00-----	.0335	T	.2554
				:05-----	241	.0408	.0479	2:00-----	18.7	.0032	.2402				
				:10-----	238	.0404	.0513	:30-----	15.7	.0026	.2416				
				:15-----	237	.0402	.0547	3:00-----	13.7	.0023	.2429				
				:30-----	234	.0396	.0647								

¹ Run-off for preceding time intervals was from impervious structure at the station and from preceding storm.

TABLE 37.—Run-off from watershed Y for selected storms, 1937-39

[Area 309 acres, rainfall measured at recording rain gage 69 in 1937 and 1938, and 69, 69a, 70, 70a, 75, 75a, 76, 82, 83, 84a, and 89 in 1939]

Date and time	Discharge	Accu- mu- lated run-off		Date and time	Discharge	Accu- mu- lated run-off		Date and time	Discharge	Accu- mu- lated run-off		Date and time	Discharge	Accu- mu- lated run-off	
STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.42 INCHES				STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.42 INCHES—Con.				STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.42 INCHES—Con.				STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.42 INCHES—Con.			
Dec. 22				Dec. 22				Dec. 22				Dec. 22			
a. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.
1:50-----	0.0524	0.0002		4:15-----	0.862	0.0027	0.0010	7:00-----	1.47	0.0046	0.0144	9:35-----	1.44	0.0046	0.0266
:55-----	.0524	.0002	10	:20-----	1.04	.0033	.0013	:05-----	1.55	.0049	.0148	:40-----	1.47	.0046	.0270
2:00-----	.0550	.0002		:25-----	1.15	.0036	.0016	:10-----	1.58	.0050	.0152	:45-----	1.55	.0049	.0274
:05-----	.0050	.0002		:30-----	1.15	.0036	.0019	:15-----	1.58	.0050	.0156	:50-----	1.62	.0051	.0278
:10-----	.0550	.0002		:35-----	1.21	.0038	.0022	:20-----	1.58	.0050	.0160	:55-----	1.78	.0056	.0282
:15-----	.0550	.0002		:40-----	1.40	.0044	.0025	:25-----	1.62	.0051	.0164	10:00-----	2.05	.0065	.0287
:20-----	.0576	.0002	.0001	:45-----	1.62	.0051	.0029	:30-----	1.66	.0052	.0169	:05-----	2.24	.0071	.0293
:25-----	.0604	.0002		:50-----	1.87	.0059	.0034	:35-----	1.62	.0051	.0173	:10-----	2.34	.0074	.0299
:30-----	.0631	.0002		:55-----	2.00	.0063	.0039	:40-----	1.66	.0052	.0177	:15-----	2.34	.0074	.0305
:35-----	.0660	.0002		5:00-----	2.00	.0063	.0044	:45-----	1.66	.0052	.0182	:20-----	2.50	.0079	.0311
:40-----	.0660	.0002		:05-----	1.91	.0060	.0049	:50-----	1.66	.0052	.0186	:25-----	2.72	.0086	.0318
:45-----	.0660	.0002		:10-----	1.82	.0058	.0054	:55-----	1.66	.0052	.0190	:30-----	3.03	.0096	.0326
:50-----	.0631	.0002	.0002	:15-----	1.74	.0055	.0059	8:00-----	1.62	.0051	.0195	:35-----	3.16	.0100	.0334
:55-----	.0631	.0002		:20-----	1.66	.0052	.0064	:05-----	1.58	.0050	.0199	:40-----	3.23	.0102	.0342
3:00-----	.0660	.0002		:25-----	1.62	.0051	.0068	:10-----	1.51	.0048	.0207	:45-----	3.30	.0104	.0351
:05-----	.0721	.0002		:30-----	1.58	.0050	.0072	:15-----	1.51	.0048	.0211	:50-----	3.74	.0118	.0360
:10-----	.0721	.0002		:40-----	1.58	.0050	.0080	:20-----	1.51	.0048	.0215	:55-----	4.13	.0131	.0371
:15-----	.0721	.0002		:50-----	1.58	.0050	.0089	:25-----	1.47	.0046	.0219	11:00-----	4.54	.0144	.0382
:20-----	.0721	.0002		:55-----	1.62	.0051	.0093	:30-----	1.47	.0046	.0223	:05-----	4.54	.0144	.0394
:25-----	.0752	.0002	.0003	6:00-----	1.58	.0050	.0097	:35-----	1.44	.0046	.0227	:10-----	4.90	.0155	.0407
:30-----	.0752	.0002		:05-----	1.58	.0050	.0101	:40-----	1.40	.0044	.0230	:15-----	4.63	.0146	.0419
:35-----	.0852	.0003		:10-----	1.55	.0049	.0105	:45-----	1.37	.0043	.0234	:20-----	4.54	.0144	.0431
:37-----	.100	.0003		:15-----	1.55	.0049	.0110	:50-----	1.37	.0043	.0237	:25-----	4.54	.0144	.0443
:40-----	.133	.0004		:20-----	1.51	.0048	.0114	9:00-----	1.34	.0042	.0241	:30-----	4.37	.0138	.0455
:42-----	.154	.0005		:25-----	1.47	.0046	.0118	:05-----	1.34	.0042	.0244	:35-----	4.37	.0138	.0466
:45-----	.199	.0006		:30-----	1.44	.0044	.0125	:10-----	1.30	.0041	.0248	:40-----	4.29	.0136	.0478
:50-----	.266	.0008		:35-----	1.40	.0044	.0129	:15-----	1.34	.0042	.0251	:45-----	4.21	.0133	.0501
:55-----	.310	.0010	.0005	:40-----	1.40	.0044	.0132	:20-----	1.34	.0042	.0255	:50-----	4.13	.0131	.0512
4:00-----	.372	.0012	.0006	:45-----	1.40	.0044	.0136	:25-----	1.34	.0042	.0258	12:00-----	4.05	.0128	.0522
:05-----	.462	.0015	.0007	:50-----	1.40	.0044	.0140	:30-----	1.40	.0044	.0262				
:10-----	.633	.0020	.0008	:55-----	1.44	.0046	.0140								

¹ Run-off for preceding time interval was from impervious structure at the station.

TABLE 37.—Run-off from watershed Y for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.42 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.65 INCHES			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.65 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.65 INCHES—Con.		
Dec. 22			Jan. 23			Jan. 23			Jan. 23		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>
12:05	3.97	0.0126	12:25	0.0923	0.0003	5:15	49.0	0.155	10:55	14.2	0.0449
10	3.89	0.0123	30	0.108	0.0003	20	47.4	0.150	11:00	13.1	0.0414
15	4.05	0.0128	35	0.118	0.0004	25	47.4	0.150	05	12.2	0.0386
20	4.21	0.0133	40	0.123	0.0004	30	46.3	0.146	10	11.6	0.0367
25	4.21	0.0133	45	0.128	0.0004	35	45.8	0.145	15	10.9	0.0345
30	4.29	0.0136	50	0.133	0.0004	40	45.3	0.143	20	10.6	0.0335
35	4.81	0.0152	55	0.138	0.0004	45	44.3	0.140	25	10.2	0.0322
40	5.75	0.0182	1:00	0.138	0.0004	50	43.3	0.137	30	9.70	0.0307
45	6.56	0.0207	05	0.154	0.0005	55	43.3	0.137	35	9.45	0.0299
50	7.32	0.0231	10	0.185	0.0006	6:00	42.8	0.135	40	9.20	0.0291
55	7.54	0.0238	13	0.251	0.0008	05	41.8	0.132	45	8.95	0.0283
1:00	7.88	0.0249	15	0.310	0.0010	10	42.3	0.134	50	8.83	0.0279
05	9.20	0.0291	16	0.372	0.0012	15	42.3	0.134	55	8.95	0.0283
10	9.58	0.0303	17	0.425	0.0013	20	43.3	0.137	12:00	9.20	0.0291
15	10.4	0.0329	18	0.500	0.0016	22	48.5	0.153	<i>p. m.</i>		
20	10.5	0.0332	20	0.703	0.0022	25	50.2	0.159	12:05	9.58	0.0303
25	11.4	0.0360	22	0.958	0.0030	28	50.7	0.160	10	9.96	0.0315
30	12.0	0.0397	25	1.24	0.0039	30	53.0	0.168	15	10.4	0.0329
35	12.4	0.0392	27	1.27	0.0040	31	48.5	0.153	20	10.8	0.0341
40	12.8	0.0405	30	1.09	0.0034	33	45.3	0.143	25	11.3	0.0357
45	13.2	0.0417	35	0.884	0.0028	35	47.4	0.150	30	11.6	0.0367
50	14.6	0.0462	40	0.778	0.0025	37	49.6	0.157	35	11.9	0.0376
53	18.0	0.0569	43	0.778	0.0025	38	56.6	0.179	40	12.2	0.0386
55	15.2	0.0481	45	0.862	0.0027	40	51.8	0.164	45	12.2	0.0386
2:00	14.2	0.0449	47	1.04	0.0033	41	49.0	0.155	50	11.9	0.0376
05	14.2	0.0449	50	1.37	0.0043	45	50.2	0.159	55	11.6	0.0367
10	14.2	0.0449	53	1.78	0.0056	50	51.8	0.164	1:00	11.3	0.0367
15	13.8	0.0436	55	2.05	0.0065	55	54.2	0.171	05	11.0	0.0348
20	13.6	0.0430	56	2.14	0.0068	7:00	54.8	0.173	10	10.8	0.0341
25	12.8	0.0405	58	2.45	0.0077	05	55.4	0.175	15	10.5	0.0332
30	12.5	0.0395	2:00	3.52	0.0111	10	52.4	0.166	20	9.96	0.0315
35	12.0	0.0379	02	4.90	0.0155	15	49.6	0.157	25	9.45	0.0299
40	11.6	0.0367	05	6.67	0.0211	20	47.4	0.150	30	8.83	0.0279
50	10.8	0.0341	07	8.12	0.0257	25	45.8	0.145	35	7.32	0.0231
3:00	9.96	0.0315	08	8.47	0.0268	30	43.3	0.137	40	6.05	0.0191
15	8.83	0.0279	09	8.47	0.0268	35	40.3	0.127	45	4.99	0.0158
20	7.66	0.0242	10	9.08	0.0287	37	39.4	0.125	50	3.89	0.0123
45	6.46	0.0204	11	9.45	0.0299	40	39.4	0.125	55	3.37	0.0107
4:00	5.65	0.0179	13	12.2	0.0386	42	39.4	0.125	3:00	3.16	0.0100
15	4.90	0.0155	15	15.6	0.0493	45	38.5	0.122	15	3.30	0.0104
30	4.21	0.0133	20	19.4	0.0613	46	37.6	0.119	20	3.52	0.0111
45	3.66	0.0116	21	21.0	0.0664	47	34.1	0.108	25	3.89	0.0123
5:00	3.30	0.0104	22	22.0	0.0696	48	37.6	0.119	30	4.29	0.0136
05	3.16	0.0100	23	30.9	0.0977	50	35.8	0.113	35	5.36	0.0169
10	3.10	0.0098	24	33.3	0.105	55	34.1	0.108	40	6.67	0.0211
15	3.03	0.0096	25	56.6	0.179	8:00	32.5	0.103	45	8.00	0.0253
20	3.10	0.0098	26	74.2	0.235	05	31.7	0.100	50	9.45	0.0299
25	3.10	0.0098	27	68.5	0.219	10	31.3	0.0990	55	10.8	0.0341
30	3.16	0.0100	28	58.4	0.185	15	30.9	0.0977	05	11.3	0.0357
35	3.23	0.0102	29	56.6	0.179	20	31.3	0.0990	10	13.8	0.0436
40	3.44	0.0109	30	51.8	0.164	25	32.9	0.104	15	15.8	0.0500
45	3.66	0.0116	31	46.8	0.148	30	34.9	0.110	20	17.0	0.0537
50	3.99	0.0126	34	44.3	0.140	35	38.5	0.122	4:00	20.2	0.0639
6:00	4.37	0.0138	35	45.8	0.145	40	41.3	0.131	05	25.0	0.0790
15	5.08	0.0161	36	43.8	0.138	43	43.3	0.137	10	29.8	0.0942
30	5.65	0.0179	40	45.3	0.143	45	46.3	0.146	15	29.8	0.0942
45	5.75	0.0182	45	46.3	0.146	50	52.4	0.166	20	28.7	0.0907
7:00	5.56	0.0176	50	47.4	0.150	55	61.0	0.193	25	26.2	0.0828
30	4.54	0.0144	55	48.0	0.152	57	64.3	0.203	30	24.1	0.0762
8:00	3.66	0.0116	3:00	48.0	0.152	58	62.4	0.197	35	22.3	0.0705
30	2.97	0.0094	05	47.4	0.150	9:00	62.4	0.203	40	20.4	0.0645
9:00	2.50	0.0079	10	50.7	0.160	05	69.9	0.221	45	19.0	0.0601
30	2.05	0.0065	15	51.2	0.162	10	72.7	0.230	50	17.6	0.0556
10:00	1.70	0.0054	20	51.8	0.164	12	72.7	0.230	5:00	17.2	0.0544
30	1.44	0.0046	25	53.0	0.168	15	72.0	0.228	15	16.2	0.0512
11:00	1.27	0.0040	30	55.4	0.175	20	71.3	0.225	30	15.0	0.0474
30	1.12	0.0035	35	54.8	0.173	25	65.0	0.205	45	12.8	0.0405
12:00	1.01	0.0032	40	54.2	0.171	28	62.4	0.197	6:00	10.5	0.0332
			45	52.4	0.166	30	60.4	0.191	15	8.95	0.0283
			50	49.6	0.157	31	57.8	0.183	30	7.54	0.0238
			55	50.7	0.160	33	62.4	0.197	45	6.36	0.0201
			4:00	54.2	0.171	34	57.8	0.183	7:00	5.46	0.0173
			05	56.6	0.179	35	56.6	0.179	30	4.29	0.0136
			10	61.0	0.193	40	51.8	0.164	8:00	3.74	0.0118
			15	63.0	0.199	45	48.0	0.152	30	3.37	0.0107
			20	64.3	0.203	50	44.3	0.140	9:00	2.97	0.0094
			22	64.3	0.203	55	39.8	0.126	30	2.55	0.0081
			25	59.1	0.187	10:00	37.6	0.119	1:00	2.29	0.0072
			28	53.0	0.168	05	34.1	0.108	30	2.00	0.0063
			30	53.0	0.168	10	31.7	0.100	11:00	1.78	0.0056
			35	53.0	0.168	15	28.4	0.0898	30	1.58	0.0050
			40	53.0	0.168	20	25.6	0.0809	12:00	1.47	0.0046
			45	53.0	0.168	25	23.2	0.0734			
			50	53.0	0.168	30	21.2	0.0670			
			55	52.4	0.166	35	19.7	0.0623			
			5:00	51.8	0.164	40	17.8	0.0563			
			05	50.7	0.160	45	16.6	0.0525			
			10	50.2	0.159	50	15.8	0.0500			

TABLE 37.—*Run-off from watershed Y for selected storms, 1937-39—Continued*

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.65 INCHES—Con.			STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.70 INCHES—Con.			STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.05 INCHES			STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.05 INCHES—Con.		
Jan. 24			Feb. 16			Mar. 28			Mar. 29		
a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.
3:00-----	0.908	0.0029	1.6066	2:29-----	150	0.474	0.0320	3:43-----	0.0205	0.0001	
4:00-----	.759	.0024	1.6092	3:0-----	180	.569	.0406	4:0-----	.0205	.0001	10
5:00-----	.668	.0021	1.6115	3:1-----	164	.519	.0497	4:6-----	.0236	.0001	
6:00-----	.570	.0018	1.6134	3:3-----	173	.547	.0674	4:7-----	.0524	.0002	
7:00-----	.474	.0015	1.6151	3:5-----	159	.503	.0849	4:8-----	.133	.0004	
8:00-----	.403	.0013	1.6165	3:6-----	164	.519	.0935	4:9-----	.221	.0007	
9:00-----	.361	.0011	1.6177	3:9-----	184	.582	.1210	5:0-----	.300	.0009	
10:00-----	.320	.0010	1.6188	4:0-----	193	.610	.1309	5:1-----	.350	.0011	
11:00-----	.274	.0009	1.6198	4:3-----	192	.607	.1612	5:2-----	.403	.0013	
12:00-----	.221	.0007	1.6206	4:5-----	189	.598	.1813	5:3-----	.500	.0016	
				5:0-----	166	.525	.2282	5:4-----	.650	.0021	.0001
				5:2-----	142	.449	.2444	5:5-----	.818	.0026	
p. m.				5:4-----	125	.395	.2585	5:6-----	1.04	.0033	
1:00-----	.178	.0006	1.6212	5:5-----	109	.345	.2647	5:7-----	1.27	.0040	.0002
2:00-----	.138	.0004	1.6217	5:7-----	97.7	.309	.2756	5:10-----	1.74	.0055	.0004
3:00-----	.104	.0003	1.6221	5:8-----	91.2	.288	.2805	5:15-----	1.58	.0050	.0009
4:00-----	.0852	.0003	1.6224	3:00-----	78.7	.249	.2895	5:16-----	1.34	.0042	.0013
5:00-----	.0721	.0002	1.6226	5:1-----	67.8	.214	.2934	5:17-----	1.27	.0040	.0016
6:00-----	.0604	.0002	1.6228	5:2-----	72.0	.228	.2970	5:18-----	1.40	.0044	.0017
8:00-----	.0550	.0002	1.6229	5:4-----	59.1	.187	.3040	5:19-----	2.05	.0065	.0018
10:00-----	.0475	.0002	1.6230	5:5-----	55.4	.175	.3070	5:20-----	4.05	.0128	.0019
12:00-----	.0426	.0001		5:8-----	45.8	.145	.3150	5:21-----	5.85	.0185	.0022
				5:9-----	47.4	.150	.3174	5:22-----	7.10	.0224	.0025
Jan. 25				5:10-----	41.3	.131	.3198	5:23-----	8.23	.0260	.0029
a. m.				5:15-----	34.1	.108	.3297	5:24-----	8.59	.0272	.0034
6:00-----	.0360	.0001	1.6236	5:20-----	30.1	.0952	.3382	5:25-----	9.96	.0315	.0043
				5:25-----	29.4	.0930	.3460	5:26-----	10.5	.0332	.0049
p. m.				5:30-----	28.0	.0885	.3536	5:27-----	11.8	.0373	.0061
4:00-----	.0360	.0001		5:35-----	23.0	.0917	.3611	5:30-----	14.2	.0449	.0081
5:00-----	.0404	.0001	1.6238	5:40-----	30.9	.0977	.3690	5:33-----	18.4	.0582	.0107
6:00-----	.0475	.0002	1.6239	5:45-----	34.1	.108	.3775	5:35-----	22.9	.0724	.0129
7:00-----	.0550	.0002	1.6241	5:50-----	35.8	.113	.3868	5:38-----	30.5	.0964	.0171
8:00-----	.0604	.0002		5:55-----	37.2	.118	.3964	5:40-----	34.1	.108	.0205
9:00-----	.0650	.0002	1.6242	5:59-----	35.8	.113	.4041	5:45-----	38.5	.122	.0301
10:00-----	.0700	.0002		6:00-----	37.2	.118	.4060	5:50-----	40.8	.129	.0405
12:00-----	.0750	.0002	1.6243	6:01-----	38.5	.122	.4080	5:53-----	39.0	.123	.0468
	.0153	T	1.6246	6:03-----	35.8	.113	.4119	5:54-----	40.8	.129	.0489
				6:04-----	36.2	.114	.4138	5:55-----	39.4	.125	.0510
				6:05-----	35.8	.113	.4157	6:00-----	36.7	.116	.0610
				6:08-----	37.2	.118	.4215	6:02-----	34.9	.110	.0648
				6:10-----	35.8	.113	.4253	6:03-----	33.7	.107	.0666
				6:15-----	34.5	.109	.4346	6:05-----	32.5	.103	.0701
				6:20-----	32.9	.104	.4434	6:07-----	27.0	.0854	.0780
				6:25-----	30.5	.0964	.4518	6:15-----	22.6	.0715	.0845
				6:30-----	27.3	.0863	.4594	6:20-----	19.4	.0613	.0900
				6:40-----	21.2	.0670	.4722	6:25-----	17.0	.0537	.0948
				6:50-----	15.8	.0500	.4819	6:28-----	15.6	.0493	.0974
				7:00-----	12.2	.0386	.4893	6:30-----	15.2	.0481	.0990
				7:15-----	9.08	.0287	.4977	6:40-----	12.0	.0379	.1062
				7:30-----	6.88	.0218	.5040	6:50-----	9.83	.0311	.1119
				7:45-----	5.08	.0161	.5087	7:00-----	6.99	.0221	.1164
				8:00-----	3.82	.0121	.5122	7:10-----	5.18	.0164	.1196
				8:15-----	3.10	.0098	.5150	7:20-----	3.89	.0123	.1220
				8:30-----	2.61	.0083	.5172	7:30-----	3.10	.0098	.1238
				8:45-----	2.19	.0069	.5191	7:35-----	2.78	.0088	.1246
				9:00-----	1.82	.0058	.5223	7:40-----	2.55	.0081	.1253
				9:30-----	1.34	.0042	.5248	7:43-----	2.50	.0079	.1257
				10:00-----	1.06	.0034	.5267	7:45-----	2.45	.0077	.1260
				10:30-----	.933	.0029	.5283	7:48-----	2.45	.0077	.1263
				11:00-----	.839	.0027	.5297	7:50-----	2.40	.0076	.1266
				11:30-----	.685	.0022	.5321	7:53-----	2.14	.0068	.1278
				12:00-----	.584	.0018	.5341	8:00-----	1.87	.0059	.1294
					.487	.0015	.5358	8:30-----	1.82	.0058	.1308
								8:45-----	1.87	.0059	.1323
								9:00-----	1.74	.0055	.1337
								9:30-----	1.66	.0052	.1364
								10:00-----	1.58	.0050	.1390
								10:30-----	1.37	.0043	.1413
								11:00-----	1.12	.0035	.1433
								11:30-----	.908	.0029	.1449
								12:00-----	.740	.0023	.1462
									.616	.0019	.1472
									.527	.0017	.1481

TABLE 37.—Run-off from watershed Y for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF APR. 15, 1938, TOTAL RAINFALL 2.16 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.16 INCHES—Con.			STORM OF MAY 17, A. M. 1939, TOTAL RAINFALL 0.96 INCH—Con.			STORM OF MAY 17, P. M. 1939, TOTAL RAINFALL 0.40 INCH—Con.		
Apr. 15.			Apr. 15.			May 17			May 17		
a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.
10:20	26.2	0.0828	0.0154	3:40	63.6	0.201	0.4100	6:25	T	T	T
:22	22.9	0.0724	.0180	:42	63.6	.201	.4168	:26	0.0002	T	T
:24	20.7	.0654	.0203	:44	60.4	.191	.4233	:27	.0030	T	T
:25	21.7	.0686	.0214	:45	60.4	.191	.4265	:28	T	T	T
:26	20.7	.0654	.0225	:47	60.4	.191	.4328	:29	.0131	T	T
:28	23.5	.0743	.0248	:50	57.8	.183	.4422	:30	.0302	0.0001	T
:30	27.3	.0863	.0275	:55	56.0	.177	.4572	:31	.0404	.0001	T
:32	30.9	.0977	.0306	4:00	53.0	.168	.4715	:32	.0500	.0002	T
:33	32.5	.103	.0323	:10	42.8	.135	.4968	:35	.0631	.0002	T
:34	35.8	.113	.0341	:20	32.5	.103	.5166	:37	.0784	.0002	T
:35	38.0	.120	.0360	:30	24.4	.0771	.5316	:38	.0923	.0003	T
:36	39.4	.125	.0380	:40	18.2	.0575	.5428	:40	.123	.0004	T
:37	41.8	.132	.0402	:50	14.0	.0443	.5513	:45	.128	.0004	T
:40	45.8	.145	.0471	5:00	10.8	.0341	.5578	:47	.118	.0004	T
:41	45.3	.143	.0495	:05	9.70	.0307	.5605	:48	.0960	.0003	T
:42	46.8	.148	.0519	:08	9.32	.0295	.5620	:49	.759	.0024	T
:43	46.8	.148	.0544	:10	9.08	.0287	.5630	:50	7.10	.0224	T
:45	54.8	.173	.0598	:15	8.71	.0275	.5653	:51	15.8	.0500	T
:46	49.6	.157	.0625	:20	8.47	.0268	.5676	:52	22.3	.0705	T
:47	53.0	.168	.0652	:25	8.71	.0275	.5698	:53	28.7	.0907	T
:48	55.4	.175	.0681	:30	9.96	.0315	.5723	:55	31.7	.100	T
:50	56.0	.177	.0739	:35	11.4	.0360	.5751	7:00	37.6	.119	T
:55	56.0	.177	.0887	:40	12.4	.0392	.5783	:02	53.0	.168	T
11:00	54.8	.173	.1033	:45	12.0	.0379	.5815	:05	59.1	.187	T
:05	51.2	.162	.1173	:50	11.3	.0357	.5845	:10	53.0	.168	T
:10	46.8	.148	.1302	:55	10.6	.0335	.5874	:12	36.7	.116	T
:15	41.3	.131	.1418	:57	10.5	.0332	.5885	:15	43.3	.137	T
:19	35.4	.112	.1499	6:00	10.5	.0332	.5902	:20	41.3	.131	T
:20	39.0	.123	.1518	:05	10.5	.0332	.5930	:25	32.5	.103	T
:21	37.2	.118	.1538	:10	10.5	.0332	.5957	:30	25.3	.0800	T
:22	39.8	.126	.1559	:15	10.1	.0319	.5985	:35	20.0	.0632	T
:24	37.2	.118	.1599	:30	8.00	.0253	.6056	:40	15.0	.0474	T
:25	35.8	.113	.1618	:45	6.05	.0191	.6112	:45	12.2	.0386	T
:30	32.5	.103	.1708	7:00	4.72	.0149	.6154	:50	9.96	.0315	T
:35	29.8	.0942	.1791	:15	3.74	.0118	.6188	:55	7.21	.0228	T
:40	28.0	.0885	.1867	:30	3.10	.0098	.6215	8:00	6.56	.0207	T
:45	27.0	.0854	.1939	:45	2.67	.0084	.6237	:05	5.36	.0169	T
12:00	25.9	.0819	.2148	8:00	2.24	.0071	.6257	:10	4.54	.0144	T
				:30	1.70	.0054	.6288	:15	3.82	.0121	T
				:45	1.47	.0046	.6300	:20	3.23	.0102	T
				9:00	1.34	.0042	.6312	:25	2.91	.0092	T
				:15	1.27	.0040	.6322	:30	2.45	.0077	T
				:30	1.15	.0036	.6331	:35	2.14	.0068	T
				10:00	1.04	.0033	.6349	:40	1.95	.0062	T
				:30	.933	.0029	.6364	:45	1.66	.0052	T
				11:00	.884	.0028	.6379	:50	1.55	.0049	T
				:30	.798	.0025	.6392	9:00	1.55	.0036	T
				12:00	.740	.0023	.6404	:15	.908	.0029	T
								:30	.0029	.0029	T
								:45	.0023	.0023	T
								10:00	.0014	.0014	T
								:15	.0010	.0010	T
								:30	.0009	.0009	T
								:35	.0008	.0008	T
								:40	.0008	.0008	T
								:45	.0008	.0008	T
								:50	.0008	.0008	T
								:55	.0008	.0008	T
								11:00	.0006	.0006	T
								:05	.0006	.0006	T
								:10	.0006	.0006	T
								:15	.0006	.0006	T
								:20	.0006	.0006	T
								:25	.0006	.0006	T
								:30	.0006	.0006	T
								:35	.0006	.0006	T
								:40	.0006	.0006	T
								:45	.0006	.0006	T
								:50	.0006	.0006	T
								:55	.0006	.0006	T
								12:00	.0002	.0002	T

TABLE 37.—Run-off from watershed Y for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAY 18, 1939, TOTAL RAINFALL 0.42 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.42 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.91 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.91 INCH—Con.		
May 18			May 18			May 20			May 20		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
6:56-----	0.0142	T	8:45-----	2.40	0.0076	12:50-----	0.0034	T	2:50-----	9.20	0.0291
:57-----	.0660	0.0002	9:00-----	1.66	.0052	:55-----	.0039	T	:55-----	7.77	.0246
:58-----	.148	.0004	:15-----	1.21	.0038	1:00-----	.0069	T	3:00-----	6.56	.0207
:59-----	.199	.0006	:30-----	.862	.0027	:02-----	.0102	T	:10-----	4.81	.0152
7:00-----	.244	.0008	10:00-----	.555	.0018	:03-----	.0121	T	:15-----	4.05	.0128
:01-----	.291	.0009	:30-----	.361	.0011	:04-----	.0153	T	:30-----	2.61	.0083
:02-----	.320	.0010	:40-----	.310	.0010	:05-----	.0192	0.0001	:40-----	2.05	.0065
:04-----	.514	.0016	:45-----	.310	.0010	:06-----	.0321	.0001	:45-----	1.82	.0058
:05-----	.884	.0028	11:00-----	.244	.0008	:07-----	.0500	.0002	4:00-----	1.34	.0042
:06-----	1.58	.0050	:15-----	.199	.0006	:08-----	.100	.0003	:15-----	1.06	.0034
:07-----	2.72	.0086	:30-----	.166	.0005	:09-----	.185	.0006	:30-----	.862	.0027
:08-----	4.81	.0152	:45-----	.148	.0004	:10-----	.282	.0009	:45-----	.721	.0023
:09-----	9.58	.0303	12:00-----	.123	.0004	:11-----	.372	.0012	5:00-----	.616	.0019
:10-----	16.0	.0506				:12-----	.487	.0015	:30-----	.462	.0015
:11-----	35.4	.112	p. m.			:13-----	.668	.0021	6:00-----	.361	.0011
:12-----	39.0	.123	12:30-----	.0960	.0003	:14-----	1.12	.0035	:30-----	.282	.0009
:13-----	42.8	.135	:45-----	.0960	.0003	:15-----	1.78	.0056	7:00-----	.236	.0008
:14-----	53.6	.169	1:00-----	.0752	.0002	:16-----	2.45	.0077	:30-----	.185	.0006
:15-----	63.6	.201	:30-----	.0576	.0002	:17-----	3.66	.0116	8:00-----	.154	.0005
:16-----	67.8	.214	2:00-----	.0426	.0001	:18-----	5.36	.0169	:30-----	.133	.0004
:17-----	70.6	.223	:30-----	.0360	.0001	:19-----	8.47	.0268	9:00-----	.108	.0003
:18-----	69.2	.219	3:00-----	.0321	.0001	:20-----	28.4	.0898	10:00-----	.0784	.0002
:19-----	67.8	.214	:30-----	.0236	.0001	:21-----	48.5	.153	11:00-----	.0576	.0002
:20-----	73.4	.232	4:00-----	.0178	.0001	:22-----	57.8	.183	:20-----	.0475	.0002
:21-----	72.0	.228	5:00-----	.0093	T	:25-----	72.7	.230	:40-----	.0381	.0001
:22-----	70.6	.223	6:00-----	.0044	T	:30-----	84.0	.266	12:00-----	.0302	.0001
:23-----	70.6	.223				:33-----	88.8	.281			
:24-----	67.1	.212	STORM OF MAY 20, 1939, TOTAL RAINFALL 0.91 INCH			:35-----	96.0	.304	p. m.		
:25-----	71.3	.225	May 20			:40-----	108	.341	12:15-----	.0236	.0001
:27-----	62.4	.197	a. m.			:45-----	92.0	.291	:30-----	.0178	.0001
:30-----	56.0	.177	12:35-----	T	T	:50-----	77.2	.244	:45-----	.0131	T
:35-----	40.8	.129	:40-----	T	T	:55-----	69.2	.219	1:00-----	.0102	T
:40-----	29.0	.0917	:43-----	T	T	2:00-----	57.8	.183	:30-----	.0069	T
:45-----	21.4	.0677	:44-----	0.0003	T	:05-----	46.8	.148	2:00-----	.0039	T
:50-----	16.0	.0506	:45-----	.0014	T	:07-----	41.8	.132	:30-----	.0019	T
:55-----	13.0	.0411	:47-----	.0030	T	:10-----	35.4	.112	3:00-----	.0007	T
8:00-----	11.8	.0373				:15-----	28.7	.0907	4:00-----	.0002	T
:05-----	8.47	.0268				:20-----	23.2	.0734	5:00-----	T	T
:10-----	6.88	.0218				:30-----	16.8	.0531	7:00-----	T	T
:20-----	4.99	.0158				:40-----	12.4	.0392	10:00-----	0	0
:30-----	3.52	.0111				:45-----	10.8	.0341			.2575

¹ Run-off for preceding time intervals was from impervious structure at the station.

TABLE 38.—Run-off from watershed W1 for selected storms, 1937-39

[Area 175.67 acres, rainfall measured at recording rain gage W-4]

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES			STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES—Con.			STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES—Con.			STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES—Con.		
Dec. 22			Dec. 22			Dec. 22			Dec. 22		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
1:20-----	0.0121	0.0001	5:15-----	1.18	0.0066	7:25-----	0.839	0.0047	9:25-----	0.862	0.0048
:44-----	.0102	.0001	:20-----	1.15	.0065	:30-----	.862	.0048	:30-----	.908	.0052
2:00-----	.0153	.0001	:25-----	1.09	.0062	:35-----	.884	.0050	:35-----	1.01	.0058
3:00-----	.0302	.0002	:30-----	1.01	.0058	:40-----	.884	.0050	:40-----	1.06	.0060
:30-----	.0404	.0003	:35-----	.958	.0054	:45-----	.908	.0052	:45-----	1.12	.0064
:35-----	.0426	.0003	:40-----	.884	.0050	:50-----	.908	.0052	:50-----	1.18	.0066
:40-----	.0500	.0003	:45-----	.818	.0046	:55-----	.933	.0053	:55-----	1.27	.0072
:45-----	.0576	.0003	:50-----	.778	.0044	8:00-----	.933	.0053	10:00-----	1.37	.0078
:50-----	.0576	.0003	:55-----	.721	.0041	:05-----	.958	.0054	:05-----	1.47	.0083
:55-----	.0690	.0004	6:00-----	.685	.0039	:10-----	.933	.0053	:10-----	1.58	.0090
4:00-----	.0784	.0004	:05-----	.650	.0037	:15-----	.908	.0052	:15-----	1.66	.0094
:05-----	.0886	.0005	:10-----	.600	.0034	:20-----	.908	.0052	:20-----	1.91	.0108
:10-----	.104	.0006	:15-----	.584	.0033	:25-----	.884	.0050	:25-----	2.14	.0121
:15-----	.143	.0008	:20-----	.584	.0033	:30-----	.862	.0048	:30-----	2.34	.0132
:20-----	.185	.0010	:25-----	.584	.0033	:35-----	.839	.0047	:35-----	2.50	.0141
:25-----	.228	.0012	:30-----	.584	.0033	:40-----	.818	.0046	:40-----	2.61	.0148
:30-----	.291	.0016	:35-----	.600	.0034	:45-----	.798	.0045	:45-----	2.67	.0151
:35-----	.291	.0016	:40-----	.633	.0036	:48-----	.798	.0045	:50-----	2.72	.0154
:40-----	.291	.0016	:45-----	.668	.0038	:50-----	.778	.0044	:55-----	2.78	.0157
:45-----	.300	.0017	:50-----	.703	.0040	:55-----	.759	.0043	11:00-----	2.91	.0164
:50-----	.392	.0022	7:00-----	.721	.0041	:57-----	.740	.0042	:05-----	2.97	.0168
:55-----	.668	.0038	:05-----	.740	.0042	9:00-----	.721	.0041	:10-----	3.03	.0171
5:00-----	1.01	.0058	:10-----	.778	.0044	:05-----	.740	.0042	:15-----	3.03	.0171
:05-----	1.15	.0065	:15-----	.798	.0045	:10-----	.740	.0042	:20-----	3.10	.0174
:10-----	1.18	.0066	:20-----	.839	.0047	:15-----	.778	.0044	:25-----	3.10	.0174
						:20-----	.798	.0045	:30-----	3.16	.0178

TABLE 38.—Run-off from watershed W1 for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES—Con.			STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.52 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.52 INCHES—Con.		
Dec. 22			Dec. 22			Jan. 23			Jan. 23		
a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.
11:35	3.10	0.0174	0.0484	6:50	4.90	0.0277	0.2990	2:24	19.5	0.110	0.0386
:40	3.10	.0174	.0499	7:00	4.72	.0266	.3035	:25	20.8	.117	.0405
:45	3.10	.0174	.0513	:30	3.89	.0220	.3157	:30	25.6	.144	.0514
:50	3.03	.0171	.0528	8:00	3.23	.0182	.3257	:35	28.0	.158	.0640
:55	2.97	.0168	.0542	:30	2.55	.0144	.3339	:40	29.9	.169	.0777
12:00	2.91	.0164	.0556	9:00	2.05	.0116	.3404	:45	31.0	.175	.0920
				:30	1.62	.0091	.3455	:50	30.6	.173	.1065
				10:00	1.30	.0074	.3497	:55	31.7	.179	.1210
				:30	1.09	.0062	.3530	:57	32.5	.184	.1271
				11:00	.884	.0050	.3558	3:00	32.5	.184	.1363
				:30	.759	.0043	.3581	:05	33.3	.188	.1517
				12:00	.650	.0037	.3601	:10	35.7	.202	.1680
								:15	37.3	.211	.1851
								:20	38.9	.220	.2031
								:25	39.7	.224	.2216
								:30	40.2	.227	.2403
								:35	38.9	.220	.2590
								:40	37.3	.211	.2769
								:45	36.1	.204	.2941
								:50	36.1	.204	.3111
								:55	35.7	.202	.3280
								4:00	35.7	.202	.3448
								:05	36.9	.208	.3619
								:10	38.1	.215	.3795
								:15	38.9	.220	.3976
								:20	39.3	.222	.4050
								:25	39.7	.224	.4347
								:30	40.2	.227	.4422
								:35	40.2	.227	.4535
								:40	39.7	.224	.4723
								:45	38.9	.220	.4910
								:50	38.5	.217	.5095
								:55	38.5	.217	.5277
								5:00	38.1	.215	.5458
								:05	37.3	.211	.5638
								:10	36.9	.208	.5815
								:15	36.5	.206	.5990
								:20	35.7	.202	.6163
								:25	34.5	.195	.6332
								:30	33.7	.190	.6498
								:35	32.5	.184	.6658
								:40	32.1	.181	.6814
								:45	31.0	.175	.6966
								:50	30.3	.171	.7114
								:55	29.9	.169	.7258
								6:00	29.5	.166	.7400
								:05	29.5	.166	.7540
								:10	29.5	.166	.7678
								:15	29.9	.169	.7817
								:20	30.6	.173	.7957
								:25	31.4	.177	.8099
								:30	32.5	.184	.8245
								:35	33.7	.190	.8395
								:40	34.9	.197	.8551
								:45	35.7	.202	.8712
								:50	36.1	.204	.8879
								:55	36.5	.206	.9047
								7:00	36.9	.208	.9218
								:05	36.5	.206	.9391
								:10	36.1	.204	.9563
								:15	34.9	.197	.9734
								:20	33.3	.188	.9901
								:25	31.4	.177	1.0062
								:30	29.9	.169	1.0213
								:35	28.0	.158	1.0357
								:40	26.2	.148	1.0494
								:45	25.2	.142	1.0621
								:50	24.2	.136	1.0742
								:55	22.8	.128	1.0858
								8:00	21.1	.119	1.0969
								:05	20.1	.114	1.1072
								:10	19.5	.110	1.1169
								:15	19.5	.110	1.1262
								:20	20.4	.115	1.1354
								:25	22.1	.125	1.1447
								:30	23.8	.134	1.1547
								:35	27.0	.152	1.1655
								:40	30.3	.171	1.1775
								:45	33.7	.190	1.1909
								:50	37.3	.211	1.2060
								:55	41.5	.234	1.2227
								9:00	44.4	.251	1.2412
								:05	46.6	.263	1.2614
								:10	48.0	.271	1.2828
								:15	48.4	.273	1.3051
								:20	48.0	.271	1.3232
								:25	48.0	.271	1.3427
								:30	48.0	.271	1.3627
								:35	48.0	.271	1.3832
								:40	48.0	.271	1.4042
								:45	48.0	.271	1.4257
								:50	48.0	.271	1.4477
								:55	48.0	.271	1.4702
								10:00	48.0	.271	1.4932
								:05	48.0	.271	1.5167
								:10	48.0	.271	1.5407
								:15	48.0	.271	1.5652
								:20	48.0	.271	1.5902
								:25	48.0	.271	1.6157
								:30	48.0	.271	1.6417
								:35	48.0	.271	1.6682
								:40	48.0	.271	1.6952
								:45	48.0	.271	1.7227
								:50	48.0	.271	1.7507
								:55	48.0	.271	1.7792
								11:00	48.0	.271	1.8082
								:05	48.0	.271	1.8377
								:10	48.0	.271	1.8677
								:15	48.0	.271	1.8982
								:20	48.0	.271	1.9292
								:25	48.0	.271	1.9607
								:30	48.0	.271	1.9927
								:35	48.0	.271	2.0252
								:40	48.0	.271	2.0582
								:45	48.0	.271	2.0917
								:50	48.0	.271	2.1257
								:55	48.0	.271	2.1602
								12:00	48.0	.271	2.1952
								:05	48.0	.271	2.2307
								:10	48.0	.271	2.2667
								:15	48.0	.271	2.3032
								:20	48.0	.271	2.3402
								:25	48.0	.271	2.3777
								:30	48.0	.271	2.4157
								:35	48.0	.271	2.4542
								:40	48.0	.271	2.4932
								:45	48.0	.271	2.5327
								:50	48.0	.271	2.5727
								:55	48.0	.271	2.6132
								1:00	48.0	.271	2.6542
								:05	48.0	.271	2.6957
								:10	48.0	.271	2.7377
								:15	48.0	.271	2.7802
								:20	48.0	.271	2.8232
								:25	48.0	.271	2.8667
								:30	48.0	.271	2.9107
								:35	48.0	.271	2.9552
								:40	48.0	.271	2.9992
								:45	48.0	.271	3.0432
								:50	48.0	.271	3.0872
								:55	48.0	.271	3.1312
								2:00	48.0	.271	3.1752
								:05	48.0	.271	3.2192
								:10	48.0	.271	3.2632
								:15	48.0	.271	3.3072
								:20	48.0	.271	3.3512
								:25	48.0	.271	3.3952
								:30	48.0	.271	3.4392
								:35	48.0	.271	3.4832
								:40	48.0	.271	3.5272
								:45	48.0	.271	3.5712
								:50	48.0	.271	3.6152
								:55	48.0	.271	3.6592
								3:00	48.0	.271	3.7032
								:05	48.0	.271	3.7472
								:10	48.0	.271	3.7912
								:15	48.0	.271	3.8352

TABLE 38.—*Run-off from watershed W1 for selected storms, 1937-39—Continued*

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.52 INCHES—Con.			STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.66 INCHES—Con.			STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.66 INCHES—Con.			STORM OF MAR. 27, 1938, TOTAL RAINFALL 0.56 INCH—Con.		
Jan. 23			Feb. 16			Feb. 16			Mar. 27		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>
4:20	14.0	0.0792	12:20	0.0381	0.0002	5:45	3.16	0.0178	8:05	0.0690	0.0004
:25	13.4	0.0756	:21	.0302	.0002	6:00	2.34	.0122	:10	.0631	.0004
:30	12.8	0.0723	:25	.0426	.0002	:15	1.87	.0105	:20	.0784	.0004
:35	12.2	0.0690	:30	.0475	.0003	:30	1.62	.0091	:25	.0815	.0005
:40	11.5	0.0650	:35	.0475	.0003	:45	1.12	.0064	:30	.0886	.0005
:45	11.0	0.0621	:40	.0500	.0003	7:00	.933	.0053	:35	.0923	.0005
:50	10.5	0.0594	:45	.0500	.0003	:30	.740	.0042	:40	.0923	.0005
:55	10.2	0.0576	:50	.0500	.0003	8:00	.584	.0033	:45	.0886	.0005
5:00	9.90	0.0559	:55	.0500	.0003	:30	.527	.0030	:46	.0817	.0005
:05	9.60	0.0542	1:00	.0524	.0003	9:00	.487	.0028	:50	.0886	.0005
:10	9.46	0.0534	:05	.0475	.0003	:30	.425	.0024	:55	.0817	.0005
:15	9.17	0.0518	:10	.0475	.0003	10:00	.361	.0020	9:00	.0752	.0004
:20	8.89	0.0502	:15	.0426	.0002	:30	.310	.0018	:02	.0817	.0005
:30	7.96	0.0449	:20	.0381	.0002	11:00	.266	.0015	:05	.0817	.0005
:40	7.20	0.0406	:25	.0381	.0002	:30	.244	.0014	:10	.0852	.0005
:50	6.26	0.0353	:30	.0404	.0002	12:00	.221	.0012	:20	.100	.0006
6:00	5.42	0.0306	:35	.0426	.0002				:30	.113	.0006
:30	4.13	0.0234	:40	.0450	.0002	Feb. 17			:40	.104	.0006
7:00	3.03	0.0171	:45	.0475	.0003	<i>a. m.</i>			:50	.104	.0006
:30	2.61	0.0148	:50	.0500	.0003	1:00	.206	.0012	10:00	.100	.0006
8:00	2.24	0.0126	:52	.0690	.0004	2:00	.185	.0010	:30	.0923	.0005
:30	1.95	0.0110	:53	.104	.0006	3:00	.166	.0009	11:00	.0784	.0004
9:00	1.70	0.0096	:54	.166	.0009	4:00	.154	.0009	:30	.0631	.0004
:30	1.47	0.0083	:55	.236	.0013	6:00	.133	.0008	12:00	.0500	.0003
10:00	1.27	0.0072	:56	.274	.0016	8:00	.118	.0006			
:30	1.12	0.0064	:57	.778	.0044	10:00	.0886	.0005	<i>p. m.</i>		
11:00	.984	0.0056	:58	1.12	.0064	12:00	.0752	.0004	12:30	.0360	.0002
:30	.908	0.0052	:59	2.24	.0126				1:00	.0360	.0002
12:00	.839	0.0047	2:00	2.91	.0164				2:00	.0302	.0002
			:05	3.66	.0207	<i>p. m.</i>			3:00	.0268	.0002
Jan. 24			:10	3.74	.0211	2:00	.0576	.0003	4:00	.0236	.0001
<i>a. m.</i>			:12	3.74	.0211	4:00	.0426	.0002	6:00	.0205	.0001
12:30	.798	.0045	:13	4.05	.0229				8:00	.0178	.0001
1:00	.703	.0040	:14	4.38	.0247				10:00	.0178	.0001
:30	.616	.0035	:15	4.72	.0266	STORM OF MAR. 27, 1938, TOTAL RAINFALL 0.56 INCH			12:00	.0178	.0001
2:00	.555	.0031	:16	5.42	.0306	Mar. 27					
:30	.500	.0028	:17	6.72	.0379	<i>a. m.</i>			6:00	.0178	.0001
3:00	.462	.0026	:18	8.22	.0464	12:10	0.0121	0.0001	10:00	.0153	.0001
:30	.425	.0024	:19	9.31	.0526	:15	.0102	T	12:00	.0121	.0001
4:00	.382	.0022	:20	11.2	.0630	:20	.0131	.0001			
:30	.340	.0019	:21	14.6	.0824	:30	.0121	T	<i>p. m.</i>		
5:00	.310	.0018	:22	19.2	.108	:35	.0121	.0001	3:00	.0121	.0001
:30	.282	.0016	:24	27.0	.152	:38	.0121	.0001	:30	.0121	.0001
6:00	.258	.0014	:25	30.6	.173	:40	.0166	.0001	:44	.0131	.0001
:30	.236	.0013	:26	40.2	.227	:43	.0220	.0001			
7:00	.221	.0012	:27	45.4	.256	:45	.0321	.0002	STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.80 INCH		
:30	.199	.0012	:28	53.9	.304	:46	.0381	.0002	Mar. 28		
8:00	.178	.0010	:30	59.0	.333	:47	.0381	.0002	<i>p. m.</i>		
:30	.166	.0009	:32	59.0	.333	:48	.0340	.0002	3:44	0.0131	0.0001
9:00	.148	.0008	:34	68.0	.384	:49	.0321	.0002	:45	.0178	.0001
:30	.138	.0008	:35	74.7	.422	:50	.0321	.0002	:46	.0604	.0004
10:00	.128	.0008	:37	83.3	.470	:55	.0360	.0002	:47	.0752	.0004
:30	.113	.0006	:39	93.4	.527	:58	.0426	.0002	:48	.0923	.0005
11:00	.104	.0006	:40	96.8	.546	:59	.0450	.0002	:49	.113	.0006
:30	.0923	.0005	:42	102	.576	1:00	.0450	.0002	:50	.154	.0009
12:00	.0852	.0005	:45	106	.598	:05	.0426	.0002	:51	.258	.0014
			:47	106	.598	:10	.0381	.0002	:52	.541	.0030
STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.66 INCHES			:50	103	.583	:15	.0321	.0002	:53	2.00	.0113
Feb. 16			:53	94.5	.534	:20	.0285	.0016	:54	3.89	.0220
<i>a. m.</i>			:55	85.5	.483	:25	.0236	.0001	:55	4.05	.0229
10:12	0.0205	0.0001	:58	71.6	.404	:30	.0178	.0001	:56	3.89	.0220
:35	.0321	.0002	3:00	61.0	.344	:35	.0178	.0001	:57	3.44	.0194
11:00	.0268	.0002	:03	52.5	.296	:40	.0178	.0001	:58	3.03	.0171
12:00	.0153	.0001	:05	46.2	.261	:45	.0178	.0001	:02	2.14	.0121
			:10	37.7	.213	:50	.0178	.0001	:03	1.27	.0072
<i>p. m.</i>			:15	30.6	.173	7:00	.0285	.0002	:05	1.06	.0060
12:05	.0268	.0002	:20	25.9	.146	:05	.0252	.0002	:06	1.06	.0060
:07	.0178	.0001	:25	23.1	.130	:10	.0252	.0002	:07	1.37	.0078
:10	.0205	.0001	:30	22.4	.126	:15	.0205	.0001	:08	1.51	.0086
:15	.0121	.0001	:35	22.8	.129	:20	.0205	.0001	:09	1.58	.0090
:16	.0550	.0003	:40	24.2	.137	:25	.0205	.0001	:10	1.58	.0090
:17	.0381	.0002	:45	25.6	.144	:30	.0205	.0001	:13	1.58	.0090
			:50	27.0	.152	:35	.0205	.0001	:15	1.66	.0094
STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.66 INCHES			:55	27.3	.154	:40	.0220	.0001	:17	1.78	.0100
Feb. 16			:58	27.6	.156	:45	.0236	.0001	:18	2.14	.0121
<i>a. m.</i>			4:00	27.3	.154	:50	.0252	.0002	:19	2.55	.0144
10:12	0.0205	0.0001	:05	27.0	.152	:55	.0252	.0002	:20	3.52	.0198
:35	.0321	.0002	:10	25.6	.144	7:00	.0285	.0002	:21	4.90	.0277
11:00	.0268	.0002	:15	24.2	.137	:05	.0340	.0002	:22	6.38	.0360
12:00	.0153	.0001	:20	22.8	.129	:10	.0426	.0002	:23	7.58	.0428
			:25	20.4	.115	:15	.0450	.0002	:25	9.90	.0559
<i>p. m.</i>			:28	19.2	.108	:20	.0500	.0003			
12:05	.0268	.0002	:30	18.3	.103	:25	.0524	.0003			
:07	.0178	.0001	:35	15.5	.0875	:30	.0524	.0003			
:10	.0205	.0001	:40	13.2	.0746	:35	.0524	.0003			
:15	.0121	.0001	:45	11.9	.0670	:40	.0576	.0003			
:16	.0550	.0003	:50	10.5	.0594	:45	.0576	.0003			
:17	.0381	.0002	:55	9.31	.0526	:50	.0550	.0003			
			5:00	7.83	.0442	:55	.0576	.0003			
STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.66 INCHES			:15	5.62	.0317	8:00	.0631	.0004			
Feb. 16			:30	4.21	.0238		.0631	.0004			
<i>a. m.</i>											
10:12	0.0205	0.0001									
:35	.0321	.0002									
11:00	.0268	.0002									
12:00	.0153	.0001									
<i>p. m.</i>											
12:05	.0268	.0002									
:07	.0178	.0001									
:10	.0205	.0001									
:15	.0121	.0001									
:16	.0550	.0003									
:17	.0381	.0002									

TABLE 38.—Run-off from watershed W1 for selected storms, 1937-39—Continued

Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off
STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.00 INCH—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.25 INCHES—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.25 INCHES—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.25 INCHES—Con.		
Mar. 28			Apr. 15			Apr. 15			Apr. 15		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>
4:26	10.2	0.0576	12:56	0.0205	0.0001	9:20	0.133	0.0005	3:06	9.08	0.0513
4:27	10.2	0.0576	1:00	0.0252	0.0002	9:25	0.166	0.0009	3:07	9.32	0.0526
4:28	9.46	0.0534	1:05	0.0360	0.0002	9:28	0.236	0.0013	3:10	13.0	0.0731
4:29	8.89	0.0502	1:08	0.0500	0.0003	9:30	0.282	0.0016	3:12	16.1	0.0909
4:30	8.75	0.0494	1:10	0.0550	0.0003	9:31	0.300	0.0017	3:13	18.0	0.102
4:32	8.89	0.0502	1:15	0.0604	0.0004	9:32	0.320	0.0018	3:14	19.5	0.110
4:35	9.03	0.0510	1:17	0.0690	0.0004	9:34	0.320	0.0018	3:15	20.4	0.115
4:37	9.03	0.0510	1:20	0.0817	0.0005	9:35	0.361	0.0020	3:17	23.8	0.134
4:40	9.75	0.0550	1:25	0.0923	0.0005	9:37	0.425	0.0024	3:18	25.6	0.144
4:45	12.4	0.0680	1:28	0.100	0.0006	9:39	0.500	0.0028	3:19	27.3	0.154
4:48	13.0	0.0734	1:30	0.100	0.0006	9:40	0.527	0.0030	3:20	28.8	0.163
4:50	13.4	0.0756	1:35	0.104	0.0006	9:43	0.570	0.0032	3:21	30.6	0.173
4:52	13.6	0.0768	1:40	0.100	0.0006	9:45	0.600	0.0034	3:22	32.5	0.184
4:55	13.6	0.0768	1:45	0.0960	0.0005	9:48	0.633	0.0036	3:23	34.1	0.192
5:00	12.2	0.0690	1:50	0.100	0.0006	9:50	0.668	0.0038	3:24	35.7	0.202
5:05	10.4	0.0585	1:52	0.100	0.0006	9:53	0.798	0.0045	3:25	37.3	0.211
5:10	8.89	0.0502	1:55	0.104	0.0006	9:55	0.884	0.0050	3:26	38.5	0.217
5:15	7.45	0.0420	2:00	0.100	0.0006	9:58	0.933	0.0053	3:27	39.7	0.224
5:20	6.60	0.0372	2:05	0.0960	0.0005	10:00	1.09	0.0062	3:29	41.0	0.232
5:25	5.83	0.0329	2:10	0.0923	0.0005	10:02	1.40	0.0079	3:30	41.9	0.236
5:30	5.08	0.0287	2:12	0.0923	0.0005	10:03	1.55	0.0088	3:33	42.3	0.239
5:35	4.63	0.0261	2:15	0.0784	0.0004	10:04	1.82	0.0102	3:35	42.3	0.239
5:40	4.05	0.0229	2:20	0.0817	0.0005	10:05	2.14	0.0121	3:40	40.6	0.229
5:50	3.23	0.0182	2:25	0.0852	0.0005	10:06	2.45	0.0138	3:41	40.2	0.227
6:00	2.61	0.0148	2:30	0.0852	0.0005	10:07	2.78	0.0157	3:45	38.5	0.217
6:10	2.14	0.0121	2:35	0.0852	0.0005	10:08	3.16	0.0178	3:50	34.9	0.197
6:20	1.74	0.0098	2:40	0.0960	0.0005	10:10	3.89	0.0220	3:55	32.1	0.181
6:30	1.47	0.0083	2:45	0.108	0.0006	10:13	5.16	0.0291	4:00	30.3	0.171
6:35	1.37	0.0078	2:50	0.113	0.0006	10:15	6.72	0.0379	4:05	28.0	0.158
6:40	1.30	0.0074	3:00	0.113	0.0006	10:17	8.22	0.0464	4:10	25.9	0.146
6:42	1.24	0.0070	3:05	0.118	0.0006	10:19	9.75	0.0550	4:15	22.8	0.129
6:45	1.27	0.0072	3:09	0.123	0.0007	10:20	10.1	0.0568	4:18	20.4	0.115
6:50	1.27	0.0072	3:10	0.118	0.0006	10:21	10.2	0.0576	4:20	19.5	0.110
6:52	1.44	0.0081	3:15	0.113	0.0006	10:22	10.5	0.0594	4:25	17.0	0.0960
6:53	1.47	0.0083	3:20	0.118	0.0006	10:25	13.2	0.0745	4:30	14.6	0.0824
6:55	1.47	0.0083	3:30	0.118	0.0006	10:27	15.6	0.0878	4:35	12.4	0.0701
7:00	1.24	0.0070	3:35	0.133	0.0008	10:28	16.1	0.0909	4:40	10.7	0.0603
7:05	1.18	0.0066	3:40	0.154	0.0009	10:30	18.9	0.107	4:45	9.31	0.0526
7:10	1.15	0.0065	3:41	0.166	0.0010	10:31	22.1	0.125	4:50	7.96	0.0449
7:15	1.21	0.0068	3:45	0.178	0.0010	10:32	24.2	0.137	4:55	6.84	0.0386
7:20	1.34	0.0076	3:50	0.192	0.0011	10:33	25.6	0.144	5:00	6.04	0.0341
7:25	1.47	0.0083	3:55	0.199	0.0012	10:35	28.8	0.163	5:05	5.52	0.0312
7:30	1.66	0.0094	4:00	0.192	0.0011	10:38	32.1	0.181	5:10	5.16	0.0291
7:35	1.74	0.0098	4:05	0.185	0.0010	10:40	34.1	0.192	5:15	5.16	0.0291
7:40	1.74	0.0098	4:10	0.172	0.0010	10:45	36.5	0.206	5:20	5.16	0.0291
7:45	1.66	0.0094	4:15	0.172	0.0010	10:50	37.3	0.211	5:25	5.16	0.0291
7:50	1.55	0.0088	4:20	0.166	0.0009	10:55	36.9	0.208	5:30	5.16	0.0291
8:00	1.30	0.0074	4:25	0.166	0.0009	11:00	35.7	0.202	5:35	4.90	0.0277
8:05	1.01	0.0058	4:30	0.166	0.0009	11:05	33.3	0.188	5:40	4.72	0.0266
8:10	0.839	0.0047	4:35	0.206	0.0012	11:10	30.6	0.173	5:45	4.63	0.0261
8:15	0.721	0.0041	4:40	0.300	0.0012	11:15	27.6	0.156	5:50	4.54	0.0256
8:20	0.600	0.0034	4:45	0.320	0.0018	11:20	24.8	0.140	5:55	4.42	0.0256
8:25	0.474	0.0027	4:50	0.320	0.0018	11:25	22.4	0.126	6:00	4.22	0.0266
8:30	0.392	0.0022	4:55	0.310	0.0018	11:30	20.8	0.117	6:05	5.42	0.0306
8:35	0.330	0.0018	5:00	0.300	0.0017	11:35	19.5	0.110	6:10	6.72	0.0379
8:40	0.282	0.0016	5:05	0.282	0.0016	11:40	18.6	0.105	6:15	7.58	0.0428
8:45	0.251	0.0014	5:10	0.258	0.0014	11:45	17.6	0.0994	6:20	7.96	0.0449
8:50	0.221	0.0012	5:15	0.228	0.0012	11:50	17.3	0.0977	6:25	8.22	0.0464
8:55			5:20	0.206	0.0012	11:55	16.4	0.0926	6:30	8.35	0.0472
9:00			5:25	0.185	0.0010	12:00	15.5	0.0875	6:35	7.96	0.0449
9:05			5:30	0.178	0.0010				6:40	7.45	0.0420
9:10			5:35	0.178	0.0010				6:45	6.84	0.0386
9:15			5:40	0.178	0.0010				6:50	6.26	0.0353
9:20			5:45	0.178	0.0010				6:55	5.62	0.0317
9:25			5:50	0.143	0.0008				7:00	4.13	0.0234
9:30			6:00	0.133	0.0008				7:05	3.10	0.0174
9:35			6:05	0.113	0.0006				7:10	2.34	0.0132
9:40			6:10	0.118	0.0006				7:15	1.91	0.0108
9:45			6:15	0.108	0.0006				7:20	1.58	0.0090
9:50			6:20	0.100	0.0006				7:25	1.21	0.0068
9:55			6:25	0.0923	0.0005				7:30	0.984	0.0056
10:00			6:30	0.0852	0.0005				7:35	0.818	0.0046
10:05			6:35	0.0752	0.0004				7:40	0.685	0.0039
10:10			6:40	0.0721	0.0004				7:45	0.616	0.0035
10:15			6:45	0.0721	0.0004				7:50	0.555	0.0031
10:20			6:50	0.0690	0.0004				7:55	0.500	0.0028
10:25			6:55	0.0660	0.0004						
10:30			7:00	0.0604	0.0004						
10:35			7:05	0.0690	0.0004						
10:40			7:10	0.0660	0.0004						
10:45			7:15	0.0631	0.0004						
10:50			7:20	0.0631	0.0004						
10:55			7:25	0.0631	0.0004						
11:00			7:30	0.0631	0.0004						
11:05			7:35	0.0631	0.0004						
11:10			7:40	0.0631	0.0004						
11:15			7:45	0.0631	0.0004						
11:20			7:50	0.0631	0.0004						
11:25			7:55	0.0631	0.0004						
11:30			8:00	0.0631	0.0004						
11:35			8:05	0.0631	0.0004						
11:40			8:10	0.0631	0.0004						
11:45			8:15	0.0631	0.0004						
11:50			8:20	0.0631	0.0004						
11:55			8:25	0.0631	0.0004						
12:00			8:30	0.0631	0.0004						
12:05			8:35	0.0631	0.0004						
12:10			8:40	0.0631	0.0004						
12:15			8:45	0.0631	0.0004						
12:20			8:50	0.0631	0.0004						
12:25			8:55	0.0631	0.0004						
12:30			9:00	0.0631	0.0004						
12:35			9:05	0.0631	0.0004						
12:40			9:10	0.0631	0.0004						
12:45			9:15	0.0631	0.0004						
12:50			9:20	0.0631	0.0004						
12:55			9:25	0.0631	0.0004						
13:00			9:30	0.0631	0.0004						
13:05			9:35	0.0631	0.0004						
13:10			9:40	0.0631	0.0004						
13:15			9:45	0.0631	0.0004						
13:20			9:50	0.							

TABLE 38.—Run-off from watershed W1 for selected storms, 1937-39—Continued

Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off
STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.25 INCHES—Con.			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.46 INCH			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.93 INCH		
Apr. 16			May 17			May 18			May 20		
p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
1:00	0.0960	0.0005	12:15	0.118	0.0007	6:46	0.0302	0.0002	12:35	0.0102	T
2:00	0.0817	0.0005	30	0.100	0.0006	50	0.0340	0.0002	45	0.0102	T
3:00	0.0721	0.0004	1:00	0.0817	0.0005	52	0.0426	0.0002	50	0.0121	0.0001
4:00	0.0631	0.0004	30	0.0631	0.0004	53	0.0500	0.0003	51	0.0166	0.0001
5:00	0.0550	0.0003	2:00	0.0475	0.0003	56	0.0752	0.0004	55	0.0178	0.0001
6:00	0.0524	0.0003	30	0.0340	0.0002	58	0.133	0.0008	1:00	0.0192	0.0001
12:00	0.0500	0.0003	3:00	0.0285	0.0002	59	0.206	0.0012	02	0.0236	0.0001
STORM OF MAY 17, 1939, A. M. TOTAL RAINFALL 1.00 INCH			4:00	0.0192	0.0001	7:00	0.251	0.0014	05	0.0450	0.0002
May 17			5:00	0.0121	0.0001	01	0.282	0.0016	10	0.0690	0.0004
a. m.			15	0.0192	0.0001	03	0.500	0.0028	15	0.138	0.0008
6:22	0.0050	T	20	0.0252	0.0001	05	0.839	0.0047	17	0.258	0.0014
25	0.0050	T	30	0.0321	0.0002	07	1.06	0.0060	20	0.437	0.0024
26	0.0056	T	6:00	0.0268	0.0002	08	1.27	0.0072	22	0.570	0.0032
27	0.0069	T	6:30	0.0236	0.0001	09	1.70	0.0096	24	0.958	0.0054
28	0.0153	0.0001	STORM OF MAY 17, 1939, P. M. TOTAL RAINFALL 0.43 INCH			10	2.67	0.0151	25	1.51	0.0086
29	0.0236	0.0001	May 17			11	4.21	0.0238	26	2.10	0.0118
30	0.0321	0.0002	p. m.			12	5.83	0.0329	28	3.66	0.0207
32	0.0426	0.0002	6:30	0.0236	0.0001	13	9.31	0.0526	30	6.38	0.0360
33	0.0524	0.0003	7:00	0.0205	0.0001	14	13.8	0.0780	31	9.46	0.0534
35	0.0660	0.0004	10	0.0220	0.0001	15	18.3	0.103	33	17.2	0.0974
38	0.0852	0.0005	15	0.0220	0.0001	16	20.4	0.115	34	25.9	0.146
39	0.104	0.0006	20	0.0268	0.0002	17	23.4	0.132	35	30.6	0.173
40	0.123	0.0007	21	0.0285	0.0002	18	27.0	0.152	36	38.5	0.217
42	0.143	0.0008	25	0.0285	0.0002	19	29.5	0.166	37	45.8	0.259
44	0.192	0.0011	30	0.0340	0.0002	20	32.5	0.184	38	51.6	0.291
45	0.236	0.0013	35	0.0524	0.0003	21	38.1	0.215	40	58.6	0.331
47	0.282	0.0016	40	0.0576	0.0003	22	43.6	0.246	43	64.0	0.361
50	0.340	0.0019	45	0.0631	0.0004	23	46.2	0.261	45	66.0	0.373
53	0.425	0.0024	50	0.0960	0.0005	24	47.5	0.268	47	67.0	0.378
55	0.541	0.0030	55	0.138	0.0008	25	48.0	0.271	48	67.5	0.381
57	0.703	0.0040	57	0.160	0.0009	26	48.0	0.271	50	67.0	0.378
58	0.933	0.0053	8:00	0.166	0.0009	28	46.2	0.261	55	64.0	0.361
59	1.21	0.0068	10	0.236	0.0013	30	43.6	0.246	2:00	57.2	0.323
7:00	1.62	0.0091	15	0.350	0.0020	33	39.3	0.222	03	53.0	0.299
02	2.05	0.0116	20	0.474	0.0027	35	36.5	0.206	05	49.3	0.278
03	2.34	0.0132	25	0.527	0.0030	36	34.9	0.197	10	44.4	0.251
05	2.67	0.0151	30	0.685	0.0039	38	30.6	0.173	15	39.5	0.223
07	3.74	0.0211	35	0.933	0.0053	40	28.0	0.158	17	37.3	0.211
08	5.42	0.0306	40	1.40	0.0079	43	23.4	0.132	20	33.7	0.190
09	6.72	0.0379	45	1.86	0.0105	48	17.6	0.0994	25	28.2	0.159
10	8.48	0.0479	50	2.45	0.0138	53	14.3	0.0807	27	26.2	0.148
12	10.8	0.0612	55	3.10	0.0174	55	14.0	0.0792	30	22.8	0.129
15	13.6	0.0768	6:00	3.89	0.0220	8:00	11.5	0.0650	35	19.5	0.110
20	18.0	0.102	6:30	5.42	0.0306	10	7.70	0.0435	37	17.3	0.0977
21	18.2	0.103	7:00	7.83	0.0442	20	5.72	0.0323	40	15.8	0.0892
24	20.3	0.115	7:30	10.7	0.0603	30	4.46	0.0252	42	14.9	0.0841
25	20.3	0.115	8:00	12.0	0.0680	40	3.52	0.0198	45	13.2	0.0745
26	20.3	0.115	8:30	12.8	0.0723	50	2.84	0.0160	50	11.5	0.0650
30	19.7	0.111	9:00	12.2	0.0690	9:00	2.29	0.0129	3:00	8.09	0.0456
33	18.0	0.102	9:30	11.3	0.0640	15	1.70	0.0096	15	5.16	0.0291
35	17.2	0.0974	10	9.90	0.0559	30	1.30	0.0074	30	3.59	0.0203
40	15.1	0.0852	15	7.45	0.0420	45	0.994	0.0058	45	2.55	0.0144
45	13.4	0.0756	20	5.62	0.0317	10:00	0.798	0.0045	40	1.87	0.0105
50	11.7	0.0659	25	4.38	0.0247	15	0.616	0.0035	15	1.37	0.0078
55	10.7	0.0603	30	3.44	0.0194	30	0.500	0.0028	30	1.04	0.0059
8:00	9.60	0.0542	35	2.72	0.0154	45	0.414	0.0024	45	0.798	0.0045
05	8.62	0.0487	40	2.19	0.0124	50	0.350	0.0020	5:00	0.650	0.0037
10	7.20	0.0406	45	1.58	0.0090	15	0.282	0.0016	15	0.514	0.0029
15	6.04	0.0341	50	1.18	0.0066	30	0.251	0.0014	30	0.425	0.0024
20	5.42	0.0306	55	0.933	0.0053	45	0.214	0.0012	45	0.350	0.0020
25	4.81	0.0272	6:00	0.721	0.0041	12:00	0.184	0.0010	6:00	0.300	0.0017
30	4.30	0.0243	6:30	0.487	0.0027	12:15	0.154	0.0009	30	0.228	0.0012
35	3.89	0.0220	7:00	0.340	0.0019	30	0.133	0.0008	7:00	0.172	0.0010
40	3.52	0.0199	May 18			45	0.113	0.0006	8:00	0.113	0.0006
45	3.16	0.0178	a. m.			1:00	0.0960	0.0005	9:00	0.0784	0.0004
00:00	2.45	0.0138	12:30	0.251	0.0014	30	0.0752	0.0004	30	0.0660	0.0004
15	1.82	0.0103	1:00	0.192	0.0011	45	0.0690	0.0004	45	0.0660	0.0004
20	1.62	0.0091	1:30	0.148	0.0008	1:00	0.0631	0.0004	10:00	0.133	0.0008
30	1.34	0.0076	2:00	0.123	0.0007	3:00	0.0631	0.0004	15	0.258	0.0014
45	0.984	0.0056	3:00	0.0852	0.0005	45	0.123	0.0007	20	0.258	0.0014
0:00	0.759	0.0043	4:00	0.0660	0.0004	5:00	0.172	0.0010	30	0.258	0.0014
15	0.584	0.0033	5:00	0.0500	0.0003	15	0.166	0.0009	40	0.221	0.0012
30	0.462	0.0026	6:00	0.0360	0.0002	30	0.143	0.0008	50	0.185	0.0010
45	0.372	0.0021	6:30	0.0321	0.0002	6:00	0.0960	0.0005	11:00	0.108	0.0006
1:00	0.291	0.0016	7:00	0.0302	0.0002	30	0.0690	0.0004	12:00	0.0784	0.0004
04	0.282	0.0016	7:30	0.0302	0.0002	45	0.0450	0.0002	p. m.		
05	0.274	0.0015	8:00	0.0205	0.0001	5:00	0.0340	0.0002	1:00	0.0500	0.0003
10	0.266	0.0015	10:00	0.0153	0.0001	6:00	0.0268	0.0002	30	0.0500	0.0003
15	0.244	0.0014	12:00	0.0121	0.0001	7:00	0.0205	0.0001	2:00	0.0360	0.0002
30	0.206	0.0012				8:00	0.0205	0.0001	3:00	0.0192	0.0001
12:00	0.138	0.0008				10:00	0.0153	0.0001	4:00	0.0121	0.0001
						12:00	0.0121	0.0001	5:00	0.0084	T

¹ Run-off for preceding time intervals was from impervious structure at the station.

[Area 130.5 acres, rainfall measured at recording rain gage W-4]

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES			STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES—Con.			STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.40 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.52 INCHES—Con.		
Dec. 22			Dec. 22			Dec. 23			Jan. 23		
<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i> <i>per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i> <i>per hr.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i> <i>per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i> <i>per hr.</i>
1:20	0.0236	0.0002	11:55	0.798	0.0061	6:00	0.0721	0.0006	6:15	8.36	0.0635
:40	.0205	.0002	12:00	.798	.0061	7:00	.0721	.0006	:20	8.60	.0654
2:00	.0236	.0002				8:00	.0690	.0005	:25	9.82	.0746
:10	.0205	.0002	<i>p. m.</i>			9:00	.0660	.0005	:30	11.1	.0843
:25	.0268	.0002	12:05	.778	.0060	10:00	.0631	.0005	:35	11.1	.0843
:30	.0268	.0002	:10	.798	.0061	11:00	.0631	.0005	:40	10.6	.0804
:35	.0340	.0002	:15	.884	.0067	12:00	.0631	.0005	:45	10.3	.0784
:40	.0340	.0002	:20	.984	.0075				:50	10.3	.0784
:45	.0381	.0003	:25	1.27	.0096				:55	10.6	.0804
:50	.0381	.0003	:30	1.58	.0120				:59	12.7	.0964
:55	.0381	.0003	:35	2.00	.0152				7:00	12.4	.0943
3:00	.0426	.0003	:40	2.40	.0182				:05	11.9	.0903
:05	.0426	.0003	:45	2.91	.0221				:10	11.6	.0882
:10	.0450	.0004	:50	3.16	.0240				:15	11.1	.0843
:15	.0475	.0004	:55	3.52	.0267				:20	10.6	.0804
:20	.0524	.0004	1:00	3.59	.0273				:25	10.3	.0784
:25	.0576	.0004	:05	3.59	.0273				:30	10.3	.0784
:30	.0604	.0004	:10	3.59	.0273				:35	10.1	.0765
:35	.0784	.0006	:15	3.59	.0273				:40	9.57	.0727
:40	.0817	.0006	:20	3.82	.0290				:45	9.32	.0708
:45	.0886	.0007	:25	3.89	.0297				:50	8.84	.0672
:50	.100	.0008	:30	3.97	.0302				:55	8.36	.0635
:52	.113	.0008	:35	4.05	.0308				8:00	7.90	.0600
:55	.138	.0010	:40	4.13	.0314				:05	7.45	.0566
4:00	.214	.0016	:45	4.13	.0314				:10	7.45	.0566
:05	.258	.0020	:50	4.13	.0314				:15	7.45	.0566
:10	.360	.0023	:55	4.13	.0314				:20	8.13	.0618
:15	.350	.0026	2:00	4.05	.0308				:25	8.60	.0654
:20	.462	.0035	:05	3.82	.0290				:30	9.08	.0690
:25	.555	.0042	:10	3.44	.0261				:35	9.57	.0727
:30	.650	.0049	:15	2.97	.0225				:40	10.3	.0784
:40	.862	.0066	:20	2.61	.0198				:45	11.1	.0843
:50	.958	.0073	:25	2.50	.0190				:50	12.7	.0964
:55	1.01	.0077	:30	2.40	.0182				:55	14.0	.107
5:00	1.01	.0077	:35	2.19	.0166				9:00	16.4	.125
:10	.958	.0073	:40	1.82	.0138				:05	16.4	.125
:20	.798	.0061	:45	1.51	.0115				:10	16.7	.

TABLE 39.—*Run-off from watershed W2 for selected storms, 1937-39—Continued*

STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.52 INCHES—Con.				[STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.56 INCHES—Con.				STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.56 INCHES—Con.				STORM OF MAR. 27, 1938, TOTAL RAINFALL 0.56 INCH—Con.											
Jan. 23				Feb. 16				Feb. 17				Mar. 27											
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i> <i>per hr.</i>	<i>In.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i> <i>per hr.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i> <i>per hr.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i> <i>per hr.</i>	<i>In.</i>								
2:00	1.34	0.0102	0.6446	2:00	0.0690	0.0005	0.0001	4:00	0.221	0.0017	0.2760	8:10	0.104	0.0008									
:15	1.22	.0093	.6471	:05	.113	.0008		5:00	.199	.0015	.2776	:15	.113	.0008	0.0040								
:30	1.00	.0076	.6492	:07	.148	.0012	.0002	6:00	.192	.0014	.2790	:20	.128	.0010	.0041								
:45	1.00	.0076	.6511	:10	.258	.0020	.0003	7:00	.178	.0014	.2805	:25	.123	.0009	.0042								
3:00	.892	.0068	.6529	:13	.425	.0032	.0004	8:00	.172	.0014	.2818	:30	.133	.0010									
:10	.892	.0068	.6540	:15	.685	.0052	.0005	9:00	.166	.0013	.2831	:35	.133	.0010	.0043								
:15	1.00	.0076	.6446	:18	1.15	.0087	.0009	:05	.160	.0012	.2832	:40	.133	.0010	.0044								
:20	1.22	.0093	.6553	:20	1.58	.0118	.0012	:10	.0752	.0006	.2833	:45	.138	.0010	.0045								
:25	1.45	.0110	.6562	:21	.0198	.0015		:15	.0131	.0001		:55	.138	.0010	.0047								
:30	1.72	.0131	.6572	:22	5.74	.0436	.0020	:20	.0062	T	.2834	9:00	.154	.0012	.0048								
:35	1.99	.0151	.6585	:23	8.13	.0618	.0029	:25	.0044	T		:05	.172	.0014	.0049								
:40	2.13	.0162	.6596	:24	11.1	.0843	.0041	:30	.0034	T		:10	.172	.0014	.0050								
:45	2.28	.0173	.6610	:25	15.2	.116	.0058	:35	.0034	T		:15	.178	.0014	.0051								
:50	2.28	.0219	.6625	:26	18.6	.141	.0079	:40	.0026	T		:30	.185	.0014	.0054								
4:00	2.28	.0219	.6654	:27	21.4	.163	.0104	:45	.0019	T		:45	.185	.0014	.0058								
:20	2.28	.0219	.6711	:28	24.8	.188	.0134	:50	.0016	T		10:00	.185	.0014	.0061								
:25	2.13	.0162	.6725	:29	30.3	.230	.0168	:55	.0011	T		:15	.172	.0014	.0065								
:30	2.28	.0219	.6739	:30	29.5	.224	.0206	10:00	.0007	T	.2835	:30	.160	.0012	.0068								
5:00	2.28	.0219	.6826	:31	28.0	.213	.0243	:15	.0006	T		:45	.154	.0012	.0071								
:10	2.28	.0219	.6855	:32	27.0	.205	.0278	:30	.0006	T		11:00	.148	.0012	.0074								
:40	1.85	.0140	.6933	:33	26.2	.199	.0311	11:00	.0011	T		:15	.128	.0010	.0076								
6:00	1.59	.0121	.6977	:34	25.6	.194	.0344	12:00	.0011	T		:30	.128	.0010	.0079								
:05	1.55	.0118	.6987	:35	24.5	.186	.0376					:45	.133	.0010	.0081								
:10	1.51	.0115	.6696	:36	23.8	.181	.0406	<i>p. m.</i>				12:00	.128	.0010	.0084								
:15	1.47	.0112	.7006	:37	22.4	.170	.0436	2:00	.0011	T		<i>p. m.</i>											
:30	1.34	.0102	.7033	:38	21.4	.163	.0463	4:00	.0011	T	.2836	12:30	.113	.0008	.0088								
7:00	1.24	.0094	.7082	:39	19.5	.148	.0489					1:00	.108	.0008	.0093								
8:00	1.09	.0083	.7170	:40	18.0	.137	.0513	STORM OF MAR. 27, 1938, TOTAL RAINFALL 0.56 INCH								1:30	.113	.0008	.0097				
9:00	.933	.0071	.7247	:41	17.0	.129	.0535	Mar. 27								2:00	.113	.0008	.0101				
10:00	.818	.0062	.7314	:42	16.1	.122	.0556									<i>a. m.</i>				:15	.143	.0011	.0104
11:00	.721	.0055	.7372	:43	15.2	.116	.0576									12:10	0.0236	0.0002	0	:30	.160	.0012	.0106
12:00	.633	.0048	.7423	:44	14.6	.111	.0595									:15	.0236	.0002		:45	.166	.0013	.0109
				:45	14.0	.107	.0613	:20	.0268	.0002		3:00	.160	.0012	.0113								
				:46	13.5	.103	.0630	:25	.0285	.0002		:15	.154	.0012	.0116								
				:47	13.0	.0984	.0647	:30	.0321	.0002		:30	.148	.0012	.0118								
				:48	12.7	.0964	.0663	:35	.0302	.0002		:45	.143	.0011	.0121								
				:49	12.1	.0922	.0679	:40	.0302	.0002	.0001	4:00	.143	.0011	.0124								
				:50	11.6	.0882	.0694	:42	.0381	.0003		:30	.128	.0010	.0129								
				:52	11.1	.0843	.0723	:45	.0524	.0004		5:00	.123	.0009	.0134								
				:55	9.82	.0746	.0763	:50	.0450	.0004		:30	.118	.0008	.0138								
				3:00	8.36	.0635	.0820	:55	.0475	.0004	.0002	6:00	.113	.0008	.0143								
				:05	7.45	.0566	.0870	:00	.0500	.0004		:30	.104	.0008	.0147								
				:10	6.72	.0511	.0915	:05	.0524	.0004		7:00	.0960	.0007	.0151								
				:15	6.38	.0485	.0957	:10	.0576	.0004	.0003	8:00	.0960	.0007	.0158								
				:20	6.49	.0493	.0997	:15	.0604	.0004	.0004	9:00	.0852	.0006	.0165								
				:25	6.96	.0529	.1040	:20	.0631	.0005	.0004	10:00	.0817	.0006	.0171								
				:30	7.58	.0576	.1086	:25	.0660	.0005	.0005	11:00	.0721	.0006	.0177								
				:35	7.96	.0605	.1135	:30	.0660	.0005	.0005	12:00	.0690	.0005	.0183								
				:40	8.22	.0625	.1186	:35	.0660	.0005	.0005	STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.00 INCH											
				:45	8.89	.0676	.1241	:40	.0660	.0005	.0005	Mar. 28											
				:50	9.17	.0697	.1298	:45	.0690	.0005	.0006					<i>p. m.</i>							
				:55	9.31	.0708	.1356	:50	.0690	.0005	.0007					3:44	0.0960	0.0007	0				
				4:00	11.0	.0836	.1421	:55	.0690	.0005	.0007					:45	.113	.0008					
				:05	11.2	.0849	.1491	:00	.0690	.0005	.0007	:46	.138	.0010									
				:10	10.7	.0812	.1560	:05	.0690	.0005	.0007	:47	.166	.0013									
				:15	9.90	.0752	.1625	:10	.0690	.0005	.0007	:50	.148	.0012	.0001								
				:20	9.17	.0697	.1686	:15	.0690	.0005	.0007	:55	.192	.0014	.0002								
				:25	8.75	.0665	.1742	:20	.0690	.0005	.0007	:00	.228	.0018									
				:30	7.96	.0605	.1795	:25	.0690	.0005	.0007	:02	.291	.0022	.0003								
				:45	6.04	.0459	.1928	:30	.0690	.0005	.0007	:03	.392	.0030	.0004								
				5:00	4.72	.0359	.2030	:35	.0690	.0005	.0007	:04	.633	.0048									
				:15	3.89	.0296	.2112	:40	.0690	.0005	.0007	:05	.862	.0066	.0006								
				:30	3.16	.0240	.2179	:45	.0690	.0005	.0007	:07	1.12	.0085	.0009								
				:45	2.55	.0194	.2233	:50	.0690	.0005	.0007	:10	1.44	.0109	.0014								
				6:00	2.14	.0163	.2278	:55	.0690	.0005	.0007	:15	1.58	.0120	.0023								
				:15	1.87	.0142	.2316	:00	.0690	.0005	.0007	:20	1.70	.0129	.0034								
				:30	1.62	.0123	.2349	:05	.0690	.0005	.0007	:25	1.91	.0145	.0045								
				:45	1.44	.0109	.2378	:10	.0690	.0005	.0007	:26	2.40	.0182	.0048								
				7:00	1.34	.0102	.2405	:15	.0690	.0005	.0007	:27	2.97	.0226	.0051								
				:15	1.27	.0096	.2430	:20	.0690	.0005	.0007	:28	4.13	.0314	.0056								
				:30	1.15	.0087	.2453	:25	.0690	.0005	.0007	:29	5.08	.0386	.0061								
				:31	.984	.0073	.2493	:30	.0690	.0005	.0007	:30	6.04	.0459	.0068								
				:32	.839	.0064	.2528	:35	.0690	.0005	.0007	:32	6.26	.0476	.0084								
				:33	.721	.0055	.2557	:40	.0690	.0005	.0007	:35	5.42	.0412	.0106								
				:34	.633	.0048	.2583	:45	.0690	.0005	.0007	:40	4.13	.0314	.0136								
				:35	.555	.0042	.2606	:50	.0690	.0005	.0007	:45	3.23	.0246	.0160								
				:36	.500	.0038	.2626	:55	.0690	.0005	.0007	:50	2.78	.0211	.0179								
				:37	.449	.0034	.2644	:00	.0690	.0005	.0007	:55	2.61	.0198	.0196								
				:38	.414	.0032	.2660	:05	.0690	.0005	.0007	5:00	2.34	.0178	.0212								
				:39	.382	.0029	.2675	:10	.0690	.0005	.0007	:10	1.91	.0145	.0238								
								:15	.0690	.0005	.0007	:15	1.70	.0129	.0250								
								:20	.0690	.0005	.0007												
								:25	.0690	.0005	.0007												
								:30	.0690	.0005	.0007												
								:35	.0690	.0005	.0007												
								:40	.0690	.0005	.0007												
								:45	.0690	.0005	.0007												
								:50	.0690	.0005	.0007												
								:55	.0690	.0005	.0007												
								:00	.0690	.0005	.0007												
								:05	.0690	.0005	.0007												
								:10	.0690	.0005	.0007												
								:15	.0690	.0005	.0007												
								:20	.0690	.0005	.0007												
								:25	.0690	.0005	.0007												
								:30	.0690	.0005	.0007												
								:35	.0690	.0005	.0007												
								:40	.0690	.0005	.0007												
								:45	.0690	.0005	.0007												
								:50	.0690	.0005	.0007												
								:55	.0690	.0005	.0007												
								:00	.0690	.0005	.0007												
	</																						

TABLE 39.—Run-off from watershed W2 for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.00 INCH—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.25 INCHES—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.25 INCHES—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.25 INCHES—Con.		
Mar. 28			Apr. 15			Apr. 15			Apr. 16		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>
5:30	1.30	0.0099	4:00	0.113	0.0008	2:35	0.759	0.0058	5:30	0.340	0.0026
4:45	1.12	0.0085	4:15	.138	.0010	4:00	.818	.0062	6:00	.330	.0025
6:00	.958	.0073	4:30	.143	.0011	4:45	.884	.0067	7:00	.300	.0023
5:30	.740	.0056	4:45	.133	.0010	5:00	.958	.0073	8:00	.291	.0022
5:35	.721	.0055	5:00	.118	.0008	5:22	1.12	.0085	9:00	.266	.0020
4:40	.703	.0054	5:15	.014	.0008	5:45	1.37	.0104	10:00	.236	.0018
4:45	.721	.0055	5:00	.0886	.0007	5:56	1.74	.0132	11:00	.221	.0017
5:50	.778	.0060	5:45	.0817	.0006	5:57	2.19	.0166	12:00	.251	.0019
5:55	.762	.0066	6:00	.0784	.0006	5:58	2.67	.0203			
7:00	.958	.0073	6:15	.0690	.0005	5:59	3.16	.0240	<i>p. m.</i>		
7:05	.933	.0071	6:30	.0631	.0005	3:00	3.82	.0290	12:15	.300	.0023
7:10	.762	.0066	6:45	.0604	.0004	3:02	4.54	.0345	12:20	.320	.0024
7:15	.839	.0064	7:00	.0524	.0004	3:05	6.04	.0459	12:25	.340	.0026
7:30	.703	.0054	7:15	.0475	.0004	3:10	7.45	.0566	12:30	.320	.0024
7:45	.616	.0047	7:30	.0450	.0004	3:15	8.62	.0654	12:45	.251	.0019
8:00	.541	.0041	7:45	.0404	.0003	3:20	9.31	.0708	1:00	.236	.0018
8:30	.462	.0035	8:00	.0426	.0003	3:25	9.60	.0730	1:30	.266	.0020
9:00	.403	.0031	8:15	.0381	.0003	3:30	9.60	.0730	2:00	.340	.0026
9:30	.350	.0026	8:30	.0381	.0003	3:35	9.46	.0719	2:30	.282	.0021
10:00	.310	.0024	8:45	.0360	.0002	4:00	9.03	.0682	3:00	.258	.0020
10:30	.282	.0021	9:00	.0381	.0003	4:45	8.75	.0665	3:30	.251	.0019
11:00	.251	.0019	9:05	.0404	.0003	5:00	8.48	.0644	4:00	.221	.0017
12:00	.221	.0017	9:10	.0426	.0003	5:55	8.35	.0634	5:00	.206	.0016
			9:15	.0426	.0003	6:00	7.83	.0595	6:00	.199	.0015
			9:20	.0500	.0004	6:15	6.84	.0520	7:00	.166	.0013
			9:25	.0550	.0004	6:30	6.15	.0468	8:00	.143	.0011
			9:30	.0690	.0005	6:45	5.42	.0412	9:00	.128	.0010
			9:35	.0817	.0006	6:50	4.63	.0352	10:00	.113	.0008
			9:40	.108	.0008	6:55	4.72	.0359	11:00	.108	.0008
			9:45	.143	.0011	7:00	4.99	.0379	12:00	.108	.0008
			9:50	.185	.0014	7:15	5.23	.0397			
			9:55	.228	.0018	7:30	5.62	.0427			
			10:00	.282	.0021	7:45	5.42	.0412			
			10:05	.372	.0028	7:50	5.23	.0397			
			10:10	.462	.0065	8:00	6.38	.0484			
			10:15	.570	.0066	8:01	7.83	.0595			
			10:20	.703	.0067	8:02	9.08	.0690			
			10:25	.908	.0069	8:03	10.6	.0804			
			10:30	1.15	.0087	8:04	12.1	.0922			
			10:35	1.30	.0099	8:05	12.4	.0943			
			10:40	1.47	.0112	8:06	13.0	.0984			
			10:45	1.74	.0132	8:07	13.5	.103			
			10:50	2.00	.0152	8:08	13.8	.105			
			10:55	2.14	.0163	8:09	14.3	.109			
			11:00	2.40	.0182	8:10	14.9	.113			
			11:05	3.16	.0240	8:11	15.5	.118			
			11:10	4.21	.0320	8:12	16.1	.122			
			11:15	5.52	.0420	8:13	16.1	.122			
			11:20	7.32	.0556	8:14	16.1	.122			
			11:25	9.31	.0708	8:15	16.4	.125			
			11:30	11.9	.0901	8:16	17.0	.127			
			11:35	14.0	.106	8:17	17.0	.127			
			11:40	13.0	.0988	8:18	17.7	.129			
			11:45	11.9	.0901	8:19	17.0	.129			
			11:50	10.7	.0812	8:20	16.7	.127			
			11:55	9.60	.0730	8:21	16.4	.125			
			12:00	8.35	.0634	8:22	15.2	.116			
			12:05	7.45	.0566	8:23	14.0	.107			
			12:10	6.96	.0529	8:24	12.4	.0943			
			12:15	6.49	.0493	8:25	11.1	.0843			
			12:20	6.15	.0467	8:26	10.6	.0804			
			12:25	5.62	.0427	8:27	10.1	.0765			
			12:30	5.08	.0386	8:28	9.31	.0708			
			12:35	4.63	.0352	8:29	8.89	.0674			
			12:40	4.30	.0326	8:30	7.83	.0595			
			12:45	3.74	.0284	8:31	6.26	.0476			
			12:50	3.37	.0256	8:32	5.52	.0420			
						8:33	4.81	.0366			
						8:34	4.46	.0339			
						8:35	3.74	.0284			
						8:36	2.78	.0211			
						8:37	2.10	.0160			
						8:38	1.62	.0123			
						8:39	1.27	.0096			
						8:40	1.04	.0079			
						8:41	.884	.0067			
						8:42	.759	.0058			
						8:43	.668	.0050			
						8:44					
						8:45					
						8:46					
						8:47					
						8:48					
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						10:07					
						10:08					
						10:09					

TABLE 39.—*Run-off from watershed W2 for selected storms, 1937-39—Continued*

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.94 INCH—Con.			STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.44 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.41 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 1.01 INCHES—Con.		
May 17			May 17			May 18			May 20		
a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.
9:45-----	0.372	0.0028	0.	9:20-----	1.66	0.0126	0.0265	8:15-----	2.84	0.0216	0.0747
10:00-----	.310	.0024	.0653	:30-----	1.37	.0104	.0284	:20-----	2.50	.0190	.0765
:15-----	.258	.0020	.0658	:40-----	1.12	.0085	.0300	:30-----	2.00	.0152	.0793
:30-----	.214	.0016	.0662	:50-----	.933	.0071	.0313	:40-----	1.62	.0123	.0816
11:00-----	.160	.0012	.0669	10:00-----	.759	.0058	.0324	:50-----	1.30	.0099	.0834
:20-----	.133	.0010	.0672	:15-----	.600	.0046	.0336	9:00-----	1.09	.0083	.0849
:40-----	.113	.0008	.0675	:30-----	.487	.0037	.0346	:15-----	.839	.0064	.0866
12:00-----	.0923	.0007	.0678	:45-----	.403	.0031	.0354	:30-----	.668	.0051	.0880
				11:00-----	.340	.0026	.0361	:45-----	.541	.0041	.0892
p. m.				:15-----	.291	.0022		10:00-----	.425	.0032	.0901
12:20-----	.0817	.0006	.0680	:30-----	.244	.0015	.0372	:15-----	.361	.0027	.0909
:40-----	.0721	.0006	.0682	:45-----	.206	.0016		:30-----	.300	.0023	.0915
1:00-----	.0631	.0005	.0684	12:00-----	.178	.0014	.0380	:45-----	.251	.0019	.0920
:30-----	.0524	.0004	.0686					11:00-----	.214	.0016	.0924
2:00-----	.0426	.0003	.0688	May 18				:15-----	.178	.0014	.0928
:30-----	.0360	.0002	.0689	a. m.				:30-----	.160	.0012	.0931
3:00-----	.0285	.0002	.0691	12:15-----	.154	.0012		:45-----	.138	.0010	.0934
:30-----	.0220	.0002	.0692	:30-----	.133	.0010	.0386	12:00-----	.118	.0009	.0936
4:00-----	.0166	.0001		1:00-----	.108	.0008	.0390				
5:00-----	.0121	.0001	.0693	:30-----	.0923	.0007	.0394	12:15-----	.108	.0008	.0938
6:00-----	.0102	.0001	.0694	2:00-----	.0784	.0006	.0397	:30-----	.0960	.0007	.0940
:30-----	.0093	.0001	.0695	3:00-----	.0604	.0004	.0402	:45-----	.0886	.0007	.0942
:40-----	.0121	.0001		4:00-----	.0500	.0004	.0406	1:00-----	.0784	.0006	.0944
:45-----	.0121	.0001	.0695	5:00-----	.0404	.0003	.0410	:30-----	.0660	.0005	.0947
				6:00-----	.0360	.0002	.0412	2:00-----	.0500	.0004	.0949
				:30-----	.0340	.0002	.0413	:20-----	.0360	.0002	
				:45-----	.0321	.0002		:40-----	.0252	.0002	.0950
				:48-----	.0340	.0002	.0414	3:00-----	.0166	.0001	.0951
								:15-----	.0236	.0002	
								:30-----	.0321	.0002	.0952
								4:00-----	.0302	.0002	.0953
								:30-----	.0360	.0003	.0954
								:45-----	.0360	.0003	.0955
								5:00-----	.0285	.0002	
								:15-----	.0285	.0002	
								:30-----	.0252	.0002	
								6:00-----	.0236	.0002	.0956
								:30-----	.0220	.0002	.0957
								7:00-----	.0178	.0001	.0958
								:30-----	.0166	.0001	
								8:00-----	.0166	.0001	
								9:00-----	.0142	.0001	.0959
								10:00-----	.0121	.0001	.0960
								12:00-----	.0084	.0001	.0962

¹ Run-off for preceding time intervals was from impervious structure at the station.

[Area 2.70 acres, rainfall measured at recording rain gage W-4a]

³ Rain ended.

TABLE 41.—Run-off from watershed 3 for selected storms, 1938-39

[Area 3.09 acres, rainfall measured at recording rain gage W-3a]

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.03 INCHES			STORM OF MAY 17, 1939, A. M., TO- TAL RAINFALL 1.03 INCHES—Con.			STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.42 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.96 INCH		
May 17			May 17			May 17			May 20		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
6:23 ¹	0	0	8:25.....	0.0574	0.0184	10:30.....	0.0010	0.0003	12:35 ¹	0	0
:30.....	0	0	:30.....	.0538	.0173	11:00.....	.0005	.0002	:52.....	0	0
:31.....	.0138	.0044	:35.....	.0538	.0173	12:00.....	0	0	:55.....	.0049	.0016
:32.....	.0370	.0119	:40.....	.0538	.0173				:56.....	.0090	.0029
:33.....	.0733	.0235	:45.....	.0538	.0173				:57.....	.0120	.0088
:35.....	.0940	.0302	9:00.....	.0504	.0162				:58.....	.0158	.0051
:37.....	.132	.0424	:10.....	.0471	.0151				1:00.....	.0351	.0113
:38.....	.132	.0424	:20.....	.0439	.0141				:02.....	.0476	.0153
:39.....	.240	.0770	:30.....	.0407	.0131				:03.....	.0890	.0286
:40.....	.485	.156	10:00.....	.0348	.0112				:04.....	.0990	.0302
:41.....	.601	.193	11:00.....	.0210	.0068				:05.....	.104	.0334
:42.....	.664	.213	12:00.....	.0124	.0040				:07.....	.146	.0468
:43.....	.613	.197							:08.....	.240	.0770
:45.....	.634	.204							:09.....	.315	.101
:50.....	.803	.258	p. m.			May 18			:10.....	.447	.144
:52.....	.832	.267	1:00.....	.0073	.0023	6:50 ¹	0	0	:12.....	.676	.217
:53.....	.803	.258	2:00.....	.0033	.0010	:51.....	0	0	:15.....	.824	.264
:54.....	.771	.247	3:00.....	.0010	.0003	:52.....	.0088	.0028	:20.....	.990	.318
:55.....	.799	.256	4:00.....	0	0	:53.....	.0071	.0023	:25.....	1.20	.384
:56.....	.822	.267				:54.....	.0465	.0149	:30.....	1.40	.449
:57.....	.824	.264				:55.....	.0714	.0229	:31.....	1.39	.445
7:00.....	.721	.231				:56.....	.0850	.0273	:35.....	1.27	.406
:02.....	.597	.192				:57.....	.240	.0770	:40.....	.990	.318
:03.....	.542	.174				:58.....	.430	.138	:44.....	.930	.294
:04.....	.470	.151				:59.....	.552	.177	:45.....	.960	.308
:05.....	.458	.147				7:00.....	.629	.202	:50.....	.817	.262
:07.....	.384	.123				:01.....	.613	.197	:55.....	.637	.204
:09.....	.356	.114				:05.....	.621	.199	:56.....	.613	.197
:10.....	.322	.103				:10.....	.494	.158	:57.....	.637	.204
:11.....	.280	.0899				:15.....	.384	.123	2:00.....	.613	.197
:13.....	.256	.0822				:20.....	.412	.132	:05 ²448	.144
:15.....	.214	.0687				:25.....	.256	.114	:07.....	.403	.129
:18.....	.187	.0600				:30.....	.313	.100	:10.....	.356	.114
:20.....	.187	.0600				:35.....	.256	.0822	:15.....	.296	.0950
:23.....	.212	.0680				:40.....	.174	.0558	:20.....	.228	.0732
:25.....	.204	.0655				:45.....	.123	.0395	:25.....	.187	.0600
:29.....	.207	.0664				:50.....	.0940	.0302	:30.....	.168	.0539
:30.....	.200	.0642				8:00.....	.0686	.0220	:35.....	.145	.0465
:33.....	.181	.0581				:05.....	.0538	.0173	:40.....	.118	.0379
:35.....	.162	.0520				:10.....	.0407	.0131	:45.....	.0851	.0273
:38.....	.134	.0430				:15.....	.0378	.0122	:50.....	.0574	.0184
:40.....	.134	.0430				:20.....	.0318	.0102	:55.....	.0407	.0131
:42.....	.122	.0392				:25.....	.0234	.0075	3:00.....	.0348	.0112
:44.....	.117	.0376				:30.....	.0186	.0060	:10.....	.0261	.0084
:45.....	.110	.0353				9:00.....	.0143	.0046	:20.....	.0164	.0053
:46.....	.0910	.0292				10:00.....	.0089	.0028	:30.....	.0143	.0046
:50.....	.0896	.0288				11:00.....	.0059	.0018	4:00.....	.0143	.0048
:55.....	.0669	.0215				12:00.....	.0033	.0010	5:00.....	.0089	.0028
8:00 ²0624	.0200							6:00.....	0	0
:05.....	.0610	.0196									
:10.....	.0610	.0196									
:15.....	.0574	.0184									
:20.....	.0574	.0184									

TABLE 42.—Run-off from watershed 5 for selected storms, 1938-39

[Area 3.09 acres, rainfall measured at recording rain gage W-2a]

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.01 INCHES			STORM OF MAY 17, 1939, A. M., TO- TAL RAINFALL 1.01 INCHES—Con.			STORM OF MAY 17, 1939, A. M., TO- TAL RAINFALL 1.01 INCHES—Con.			STORM OF MAY 17, 1939, A. M. TO- TAL RAINFALL 1.01 INCHES—Con.		
May 17			May 17			May 17			May 17		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
6:23 ¹	0	0	6:45.....	2.29	0.734	7:15.....	0.356	0.114	8:10.....	0.0610	0.0196
:33.....	0	0	:48.....	1.85	.593	:16.....	.304	.0974	:15 ²0439	.0140
:34.....	.0218	.0070	:50.....	1.79	.574	:17.....	.234	.0750	:20.....	.0937	.0311
:35.....	.0166	.0053	:53.....	1.70	.545	:20.....	.193	.0619	:25.....	.0261	.0084
:36.....	.0144	.0046	:55.....	1.55	.497	:25.....	.167	.0535	:30.....	.0186	.0060
:37.....	.0256	.0082	:58.....	1.23	.304	:30.....	.238	.0763	:35.....	.0164	.0053
:38.....	.0230	.0074	7:00.....	1.11	.356	:35.....	.234	.0750	:40.....	.0089	.0028
:39.....	.221	.0709	:05.....	.900	.289	:40.....	.186	.0598	:45.....	.0062	.0020
:40.....	.574	.184	:07.....	.798	.256	:45.....	.133	.0426	9:00.....	.0021	.0007
:41.....	1.05	.337	:09.....	.688	.221	:50.....	.103	.0331	:15.....	.0016	.0005
:42.....	1.40	.449	:10.....	.542	.174	:55.....	.0703	.0225	:30.....	.0010	.0003
:43.....	2.14	.686	:11.....	.398	.128	8:00.....	.0797	.0256	:45.....	.0005	.0002
:44.....	2.17	.696	:12.....	.329	.106	:05.....	.0824	.0264	10:00.....	0	0

¹ Rain began.² Rain ended.

TABLE 42.—Run-off from watershed 5 for selected storms, 1938-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.42 INCH			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.51 INCH.—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.51 INCH.—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.93 INCH.—Con.		
May 17			May 18			May 18			May 20		
<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>
6:45 ¹	0	0	6:54.....	0.0094	0.0030	9:00.....	0.0089	0.0028	1:32.....	1.76	0.564
7:37.....	0	0	7:00.....	0.0094	0.0030	1:15.....	0.0050	0.0018	1:35.....	1.68	0.539
7:38.....	.0672	.0215	7:01.....	.227	.0728	1:30.....	.0045	.0014	1:37.....	1.64	.526
7:39.....	.0932	.0299	7:02.....	.414	.133	10:00.....	.0033	.0010	1:40.....	1.51	.484
7:40.....	.118	.0378	7:03.....	.562	.180	11:00.....	.0021	.0007	1:42.....	1.28	.410
7:41.....	.155	.0497	7:04.....	.792	.254	12:00.....	.0016	.0005	1:44.....	.977	.313
7:42.....	.179	.0574	7:05.....	3.02	.968		.0010	.0003	1:45.....	.885	.284
7:43.....	.242	.0776	7:06.....	5.19	1.66				1:47.....	.698	.224
7:44.....	.257	.0824	7:07.....	4.75	1.52				1:50.....	.672	.216
7:45.....	.331	.106	7:08.....	.02	.0907				1:53.....	.642	.206
7:46.....	.367	.118	7:09.....	.03	.0988				1:55.....	.792	.254
7:47.....	.340	.109	7:10.....	.04	.1245				1:57.....	.818	.262
7:48.....	.313	.100	7:11.....	.05	.1371				1:59.....	.832	.267
7:49.....	.297	.095	7:12.....	.06	.1482				2:00.....	.775	.248
7:50.....	.340	.109	7:13.....	.07	.1578				2:02.....	.695	.223
7:51.....	.356	.114	7:14.....	.08	.1659				2:05.....	.655	.210
7:52.....	.304	.0974	7:15.....	.09	.1729				2:07.....	.640	.205
7:53.....	.242	.0774	7:16.....	.10	.1791				2:10.....	.644	.206
7:54.....	.186	.0598	7:17.....	.11	.1897				2:12.....	.584	.187
7:55.....	.140	.0448	7:18.....	.12	.1981				2:15.....	.549	.176
7:56.....	.118	.0378	7:19.....	.13	.2047				2:17.....	.421	.135
7:57.....	.0986	.0316	7:20.....	.14	.2101				2:20.....	.392	.126
7:58.....	.0808	.0260	7:21.....	.15	.2142				2:22.....	.365	.117
7:59.....	.0504	.0162	7:22.....	.16	.2228				2:25.....	.264	.0846
8:00.....	.0288	.0092	7:23.....	.17	.2302				2:27.....	.200	.0642
8:01.....	.0143	.0046	7:24.....	.18	.2364						
8:02.....	.0073	.0023	7:25.....	.19	.2416						
8:03.....	.0045	.0014	7:26.....	.20	.2459						
8:04.....	.0021	.0007	7:27.....	.21	.2496						
8:05.....	.0016	.0005	7:28.....	.22	.2528						
8:06.....	.0010	.0003	7:29.....	.23	.2554						
8:07.....	.0005	.0002	7:30.....	.24	.2576						
8:08.....	0	0	7:31.....	.25	.2594						
8:09.....			7:32.....	.26	.2609						
8:10.....			7:33.....	.27	.2622						
8:11.....			7:34.....	.28	.2632						
8:12.....			7:35.....	.29	.2640						
8:13.....			7:36.....	.30	.2647						
8:14.....			7:37.....	.31	.2653						
8:15.....			7:38.....	.32	.2658						
8:16.....			7:39.....	.33	.2662						
8:17.....			7:40.....	.34	.2662						
8:18.....			7:41.....	.35	.2662						
8:19.....			7:42.....	.36	.2662						
8:20.....			7:43.....	.37	.2662						
8:21.....			7:44.....	.38	.2662						
8:22.....			7:45.....	.39	.2662						
8:23.....			7:46.....	.40	.2662						
8:24.....			7:47.....	.41	.2662						
8:25.....			7:48.....	.42	.2662						
8:26.....			7:49.....	.43	.2662						
8:27.....			7:50.....	.44	.2662						
8:28.....			7:51.....	.45	.2662						
8:29.....			7:52.....	.46	.2662						
8:30.....			7:53.....	.47	.2662						
8:31.....			7:54.....	.48	.2662						
8:32.....			7:55.....	.49	.2662						
8:33.....			7:56.....	.50	.2662						
8:34.....			7:57.....	.51	.2662						
8:35.....			7:58.....	.52	.2662						
8:36.....			7:59.....	.53	.2662						
8:37.....			8:00.....	.54	.2662						
8:38.....			8:01.....	.55	.2662						
8:39.....			8:02.....	.56	.2662						
8:40.....			8:03.....	.57	.2662						
8:41.....			8:04.....	.58	.2662						
8:42.....			8:05.....	.59	.2662						
8:43.....			8:06.....	.60	.2662						
8:44.....			8:07.....	.61	.2662						
8:45.....			8:08.....	.62	.2662						
8:46.....			8:09.....	.63	.2662						
8:47.....			8:10.....	.64	.2662						
8:48.....			8:11.....	.65	.2662						
8:49.....			8:12.....	.66	.2662						
8:50.....			8:13.....	.67	.2662						
8:51.....			8:14.....	.68	.2662						
8:52.....			8:15.....	.69	.2662						
8:53.....			8:16.....	.70	.2662						
8:54.....			8:17.....	.71	.2662						
8:55.....			8:18.....	.72	.2662						
8:56.....			8:19.....	.73	.2662						
8:57.....			8:20.....	.74	.2662						
8:58.....			8:21.....	.75	.2662						
8:59.....			8:22.....	.76	.2662						
9:00.....			8:23.....	.77	.2662						
9:01.....			8:24.....	.78	.2662						
9:02.....			8:25.....	.79	.2662						
9:03.....			8:26.....	.80	.2662						
9:04.....			8:27.....	.81	.2662						
9:05.....			8:28.....	.82	.2662						
9:06.....			8:29.....	.83	.2662						
9:07.....			8:30.....	.84	.2662						
9:08.....			8:31.....	.85	.2662						
9:09.....			8:32.....	.86	.2662						
9:10.....			8:33.....	.87	.2662						
9:11.....			8:34.....	.88	.2662						
9:12.....			8:35.....	.89	.2662						
9:13.....			8:36.....	.90	.2662						
9:14.....			8:37.....	.91	.2662						
9:15.....			8:38.....	.92	.2662						
9:16.....			8:39.....	.93	.2662						
9:17.....			8:40.....	.94	.2662						
9:18.....			8:41.....	.95	.2662						
9:19.....			8:42.....	.96	.2662						
9:20.....			8:43.....	.97	.2662						
9:21.....			8:44.....	.98	.2662						
9:22.....			8:45.....	.99	.2662						
9:23.....			8:46.....	1.00	.2662						
9:24.....			8:47.....	1.01	.2662						
9:25.....			8:48.....	1.02	.2662						
9:26.....			8:49.....	1.03	.2662						
9:27.....			8:50.....	1.04	.2662						
9:28.....			8:51.....	1.05	.2662						
9:29.....			8:52.....	1.06	.2662						
9:30.....			8:53.....	1.07	.2662						
9:31.....			8:54.....	1.08	.2662						
9:32.....			8:55.....	1.09	.2662						
9:33.....			8:56.....	1.10	.2662						
9:34.....			8:57.....	1.11	.2662						
9:35.....			8:58.....	1.12	.2662						
9:36.....			8:59.....	1.13	.2662						
9:37.....			9:00.....	1.14	.2662						
9:38.....			9:01.....	1.15	.2662						
9:39.....			9:02.....	1.16	.2662						
9:40.....			9:03.....	1.17	.2662						
9:41.....			9:04.....	1.18	.2662						
9:42.....			9:05.....	1.19	.2662						
9:43.....			9:06.....	1.20	.2662						
9:44.....			9:07.....	1.21	.2662						
9:45.....			9:08.....	1.22	.2662						
9:46.....			9:09.....	1.23	.2662						
9:47.....			9:10.....	1.24	.2662						
9:48.....			9:11.....	1.25	.2662						
9:49.....			9:12.....	1.26	.2662						
9:50.....			9:13.....	1.27	.2662						
9:51.....			9:14.....	1.28	.2662						
9:52.....			9:15.....	1.29	.2662						
9:53.....			9:16.....	1.30	.2662						
9:54.....			9:17.....	1.31	.2662						
9:55.....			9:18.....	1.32	.2662						
9:56.....			9:19.....	1.33	.2662						
9:57.....			9:20.....	1.34	.2662						
9:58.....			9:21.....	1.35	.2662						
9:59.....			9:22.....	1.36	.2662						
10:00.....			9:23.....	1.37	.2662						
10:01.....			9:24.....	1.38	.2662						

TABLE 43.—Run-off from watershed 6 for selected storms, 1938-39—Continued

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.45 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.44 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.44 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 1.06 INCHES—Con.		
May 17			May 18			May 18			May 20		
p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
8:20-----	0.576	0.188	6:55-----	1.08	0.352	10:30-----	0.0010	0.0003	1:35-----	2.13	0.694
:25-----	.424	.138	:56-----	2.01	.655	11:00-----	0	0	:40-----	1.93	.628
:30-----	.268	.0873	:57-----	4.06	1.32				:41-----	1.71	.557
:35-----	.210	.0683	:58-----	5.31	1.73				:45-----	1.37	.448
:40-----	.175	.0569	:59-----	6.19	2.02				:47-----	1.07	.349
:45-----	.145	.0473	7:00-----	6.90	2.25	STORM OF MAY 20, 1939, TOTAL RAINFALL 1.06 INCHES			:49-----	1.05	.343
:50-----	.118	.0384	:01-----	5.52	1.80				:50-----	1.09	.356
:55-----	.103	.0337	:02-----	4.55	1.48				:52-----	1.44	.471
9:00-----	.0896	.0292	:03-----	3.82	1.24				:53-----	1.92	.624
:10-----	.0648	.0212	:04-----	3.04	.991				:55-----	2.15	.700
:20-----	.0471	.0154	:05-----	2.69	.877				:58-----	1.58	.514
:30-----	.0348	.0113	:06-----	2.24	.729				2:00-----	1.20	.390
:40-----	.0261	.0085	:07-----	1.85	.603	May 20			:03-----	.877	.286
:50-----	.0186	.0061	:08-----	1.20	.393	a. m.			:05-----	.749	.244
10:00-----	.0124	.0040	:09-----	.984	.321	12:55-----	0	0	:07-----	.604	.197
:10-----	.0089	.0029	:10-----	.968	.316	:59-----	.0073	.0012	:10-----	.428	.140
:20-----	.0059	.0020	:11-----	.877	.286	1:00-----	.0114	.0037	:13-----	.304	.0992
:30-----	.0033	.0011	:12-----	.633	.206	:01-----	.0178	.0058	:15-----	.242	.0789
:40-----	.0016	.0005	:13-----	.538	.176	:02-----	.0344	.0112	:20-----	.181	.0590
:50-----	.0010	.0003	:14-----	.432	.141	:03-----	.0576	.0188	:23-----	.140	.0455
11:00-----	.0006	.0002	:15-----	.338	.110	:04-----	.115	.0375	:25-----	.134	.0437
:15-----	0	0	:16-----	.288	.0939	:05-----	.322	.105	:30-----	.118	.0384
			:17-----	.242	.0789	:06-----	.960	.313	:40-----	.0851	.0277
			:18-----	.228	.0742	:07-----	1.80	.536	:50-----	.0726	.0237
			:19-----	.162	.0528	:08-----	2.33	.759	3:00-----	.0574	.0187
			:20-----	.108	.0352	:09-----	2.62	.854	:30-----	.0378	.0123
			:21-----	.0986	.0322	:10-----	2.54	.827	:45-----	.0262	.0085
			:22-----	.0895	.0292	:11-----	2.16	.702	4:00-----	.0186	.0061
			:23-----	.0809	.0264	:12-----	2.48	.807	:15-----	.0124	.0040
			:24-----	.0574	.0187	:13-----	2.78	.905	:30-----	.0105	.0034
			:25-----	.0348	.0113	:14-----	.905	.1434	:45-----	.0073	.0024
			:26-----	.0210	.0068	:15-----	.807	.1863	5:00-----	.0059	.0020
			:27-----	.0124	.0040	:16-----	.782	.2390	:30-----	.0033	.0011
			:28-----	.0073	.0024	:17-----	.792	.2653	6:00-----	.0016	.0005
			:29-----	.0045	.0015	:18-----	2.26	.735	:30-----	.0006	.0002
			:30-----	.0021	.0007	:19-----	2.35	.766	7:00-----	0	.0001
						:20-----	2.36	.768			
						:21-----					
						:22-----					
						:23-----					
						:24-----					
						:25-----					
						:26-----					
						:27-----					
						:28-----					
						:29-----					
						:30-----					
						:31-----					

TABLE 44.—Run-off from watershed 7 for selected storms, 1938-39

[Area 3.15 acres, rainfall measured at recording rain gage 82]

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.05 INCHES			STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.05 INCHES—Con.			STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.05 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.		
Mar. 28			Mar. 28			Mar. 28			Apr. 15		
p. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
3:43-----	0	0	4:24-----	0.560	0.176	6:35-----	0.0092	0.0029	9:35-----	0.0081	0.0026
:46-----	.0216	.0068	:25-----	.525	.166	:40-----	.0105	.0033	:40-----	.0114	.0036
:47-----	.100	.0315	:26-----	.424	.134	:42-----	.0079	.0025	:44-----	.0146	.0046
:48-----	.206	.0649	:27-----	.352	.111	:43-----	.0165	.0052	:45-----	.0119	.0038
:49-----	.096	.0303	:28-----	.207	.0652	:46-----	.0165	.0052	:46-----	.0080	.0025
:50-----	.078	.0246	:29-----	.128	.0404	:50-----	.0172	.0054	:48-----	.0203	.0064
:51-----	.047	.0148	:30-----	.103	.0326	:55-----	.0164	.0052	:50-----	.0343	.0108
:52-----	.0252	.0079	:35-----	.140	.0441	7:00-----	.0143	.0045	:53-----	.0233	.0073
:53-----	.0203	.0064	:40-----	.145	.0457	:15-----	.0073	.0023	:55-----	.0188	.0059
:54-----	.0063	.0020	:45-----	.0851	.0268	:30-----	.0033	.0010	:58-----	.0215	.0068
:55-----	.0612	.0193	:48-----	.0538	.0170	8:00-----	0	0	:59-----	.0523	.0165
:56-----	.210	.0662	:50-----	.0439	.0138				10:00-----	.125	.0393
:57-----	.194	.0612	:55-----	.0318	.0100				:01-----	.147	.0463
:58-----	.162	.0511	5:00-----	.0330	.0104	STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES			:05-----	.0922	.0291
:59-----	.115	.0362	:05-----	.0245	.0077				:10-----	.118	.0372
4:00-----	.0783	.0247	:10-----	.0210	.0066				:11-----	.207	.0652
:01-----	.0610	.0192	:15-----	.0186	.0059				:12-----	.264	.0832
:02-----	.0471	.0148	:20-----	.0143	.0045				:14-----	.225	.0709
:03-----	.0348	.0110	:25-----	.0164	.0052				:15-----	.279	.0880
:04-----	.0288	.0091	:30-----	.0129	.0041	Apr. 15			:17-----	.304	.0958
:05-----	.0261	.0082	:35-----	.0143	.0045	a. m.			:18-----	.394	.124
:10-----	.0186	.0059	:40-----	.0124	.0039	8:45-----	0	0	:20-----	.459	.145
:13-----	.0245	.0077	:45-----	.0124	.0039	:55-----	.0003	.0001	:24-----	.569	.179
:14-----	.0364	.0115	:50-----	.0124	.0039	9:00-----	.0022	.0007	:25-----	.523	.165
:15-----	.0240	.0076	:55-----	.0124	.0039	:05-----	.0059	.0018	:30-----	.361	.114
:16-----	.0309	.0097	6:00-----	.0124	.0039	:08-----	.0044	.0014	:33-----	.542	.171
:17-----	.0696	.0219	:05-----	.0124	.0039	:10-----	.0079	.0025	:35-----	.714	.225
:18-----	.0840	.0265	:10-----	.0124	.0039	:20-----	.0115	.0036	:36-----	.796	.251
:19-----	.204	.0643	:15-----	.0124	.0039	:25-----	.0066	.0020	:40-----	.636	.200
:20-----	.295	.0930	:20-----	.0105	.0033	:26-----	.0138	.0044	:42-----	.858	.270
:21-----	.288	.0908	:25-----	.0105	.0033	:27-----	.0080	.0025	:44-----	1.12	.353
:22-----	.358	.113	:30-----	.0092	.0029	:28-----	.0066	.0021	:45-----	.953	.300
:23-----	.497	.157				:30-----	.0129	.0041			

TABLE 44.—Run-off from watershed 7 for selected storms, 1938-39—Continued

Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off
STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.97 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.42 INCH—Con.		
Apr. 15			Apr. 15			May 17			May 18		
a. m.	Sec.-ft.	In.	p. m.	Sec.-ft.	In.	a. m.	Sec.-ft.	In.	a. m.	Sec.-ft.	In.
10:47	0.667	0.210	4:25	0.0726	0.0229	8:00	0.0462	0.0146	7:15	0.777	0.245
:50	.452	.142	:30	.0504	.0159	:05	.0439	.0138	:18	.608	.192
:53	.365	.115	:35	.0261	.0082	:10	.0348	.0110	:20	.394	.124
:55	.330	.104	:40	.0186	.0059	:15	.0288	.0091	:21	.322	.101
11:00	.280	.0883	:43	.0124	.0039	:20	.0186	.0059	:23	.268	.0844
:03	.264	.0832	:45	.0089	.0028	:25	.0186	.0059	:25	.214	.0675
:05	.292	.0920	:50	.0073	.0023	:30	.0164	.0052	:30	.174	.0548
:07	.317	.0999	5:00	.0073	.0023	:35	.0164	.0052	:35	.137	.0431
:10	.322	.102	:10	.0031	.0010	:40	.0164	.0052	:40	.103	.0326
:15	.309	.0974	:14	.0024	.0008	:45	.0143	.0045	:45	.0767	.0242
:19	.309	.0974	:15	.0043	.0014	:50	.0105	.0035	:50	.0517	.0163
:20	.326	.103	:16	.0107	.0034	:55	.0089	.0028	:55	.0407	.0128
:25	.361	.114	:17	.0206	.0065	9:00	.0073	.0026	8:00	.0288	.0091
:27	.389	.123	:18	.0523	.0165	:05	.0059	.0018	:05	.0210	.0066
:30	.399	.126	:19	.115	.0362	:10	.0045	.0014	:10	.0143	.0045
:40	.322	.102	:20	.174	.0548	:15	.0033	.0010	:15	.0105	.0033
:50	.228	.0719	:25	.242	.0763	:20	.0021	.0007	:20	.0073	.0023
:55	.181	.0570	:30	.214	.0675	:25	.0010	.0004	:25	.0059	.0018
:59	.150	.0473	:35	.162	.0511	:30	.0006	.0002	:30	.0033	.0010
12:00	.156	.0492	:40	.128	.0404	:40	.0003	.0001	:45	.0016	.0005
p. m.			:45	.0896	.0282	:50	0	0	9:00	.0010	.0003
12:03	.181	.0570	:48	.0574	.0181				:30	.0006	.0002
:05	.168	.0530	:50	.0439	.0138				10:30	0	0
:08	.133	.0419	:55	.0261	.0082	STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.42 INCH					
:10	.108	.0340	:59	.0164	.0052	May 17			May 20		
:14	.0809	.0255	6:00	.0143	.0045	p. m.	0	0	a. m.	0	0
:15	.0809	.0255	:05	.0073	.0023	7:36	0	0	1:00	0	0
:20	.0825	.0260	:10	.0059	.0018	:37	.0050	.0016	:01	.0114	.0036
:25	.0825	.0260	:20	.0021	.0007	:40	.0299	.0094	:02	.0198	.0062
:30	.0741	.0234	:30	0	0	:42	.0597	.0188	:03	.0410	.0129
:35	.0648	.0204	STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.97 INCH			:44	.0453	.0143	:04	.115	.0362
:40	.0648	.0204	May 17			:45	.0489	.0154	:05	.312	.0984
:45	.0574	.0181	a. m.			:47	.0876	.0276	:06	.538	.170
:50	.0378	.0119	6:36	0	0	:50	.112	.0352	:07	.897	.283
:53	.0261	.0082	:37	.0860	.0271	:52	.138	.0433	:08	1.16	.364
:55	.0210	.0066	:38	.2435	.0768	:55	.194	.0613	:09	1.72	.541
:58	.0124	.0039	:39	.573	.181	:00	.236	.0743	:10	2.08	.657
1:00	.0073	.0023	:40	1.75	.551	:05	.292	.0920	:12	2.24	.705
:10	.0021	.0007	:41	2.52	.796	:10	.330	.104	:14	2.07	.652
:20	.0016	.0005	:42	2.86	.903	:15	.399	.126	:15	2.13	.671
:30	.0003	.0001	:43	2.92	.922	:20	.404	.127	:17	2.74	.865
:45	0	0	:44	2.92	.922	:25	.374	.118	:20	3.30	1.04
2:15	0	0	:45	2.95	.931	:30	.272	.0857	:25	2.49	.784
:25	.0006	.0002	:46	2.86	.903	:35	.220	.0694	:28	2.12	.667
:27	.0008	.0002	:47	2.74	.865	:40	.181	.0570	:30	1.96	.616
:28	.0009	.0003	:49	2.54	.800	:45	.134	.0422	:35	1.64	.519
:29	.0073	.0023	:50	2.43	.765	:50	.0896	.0282	:39	1.50	.472
:30	.0114	.0036	:52	2.20	.693	:55	.0574	.0181	:40	1.42	.447
:31	.0188	.0059	:54	1.93	.608	9:00	.0378	.0119	:43	1.07	.338
:34	.0498	.0157	:55	1.86	.585	:10	.0186	.0059	:45	.898	.283
:35	.0660	.0208	:59	1.54	.484	:15	.0124	.0039	:49	.636	.201
:38	.113	.0356	7:00	1.41	.444	:20	.0089	.0028	:50	.600	.189
:39	.140	.0441	:01	1.26	.397	:30	.0059	.0018	:52	.576	.181
:40	.174	.0548	:05	.938	.296	:40	.0033	.0010	:53	.604	.190
:44	.242	.0763	:06	.848	.267	:50	.0021	.0007	:54	.616	.194
:45	.249	.0785	:08	.723	.228	10:00	.0010	.0004	:55	.612	.193
:50	.200	.0630	:09	.684	.216	:30	.0003	.0001	:56	.600	.189
:55	.144	.0454	:10	.633	.200	11:00	0	0	2:00	.452	.145
3:00	.100	.0315	:11	.604	.190				:03	.384	.121
:03	.0903	.0285	:12	.527	.166	STORM OF MAY 18, 1939, TOTAL RAINFALL 0.42 INCH			:04	.403	.127
:04	.149	.0470	:14	.384	.121	May 18			:05	.390	.123
:05	.264	.0832	:15	.347	.109	a. m.	0	0	:06	.330	.104
:06	.366	.115	:16	.322	.102	6:54	0	0	:08	.330	.104
:07	.553	.174	:18	.318	.100	:55	.0294	.0093	:10	.288	.0908
:08	.960	.303	:20	.292	.0920	:56	.204	.0643	:13	.228	.0719
:09	1.27	.400	:22	.280	.0881	:57	.487	.154	:14	.220	.0694
:10	1.34	.422	:25	.256	.0807	:58	1.46	.462	:15	.187	.0589
:11	1.36	.429	:26	.235	.0741	:59	2.17	.685	:20	.128	.0404
:15	1.09	.344	:28	.214	.0675	7:00	2.84	.894	:25	.0942	.0296
:18	.782	.246	:30	.156	.0492	:01	3.50	1.10	:30	.0686	.0215
:19	.564	.178	:31	.142	.0447	:02	3.44	1.09	:35	.0538	.0170
:20	.296	.0933	:35	.113	.0356	:05	2.84	.894	:40	.0407	.0128
:21	.152	.0479	:40	.0702	.0221	:08	2.14	.675	:45	.0261	.0082
:23	.130	.0325	:42	.0705	.0222	:09	1.83	.577	:50	.0186	.0059
:24	.0922	.0291	:45	.0665	.0210	:10	1.57	.495	3:00	.0124	.0039
:25	.0986	.0311	:48	.0702	.0221	:11	1.24	.391	:10	.0089	.0028
:27	.152	.0479	:50	.0648	.0204	:12	1.12	.353	:20	.0059	.0018
:28	.177	.0558	:51	.0574	.0181	:13	1.02	.322	:30	.0045	.0014
:30	.234	.0738	:54	.0504	.0159				:45	.0033	.0010
:35	.296	.0933	:55	.0419	.0132				4:00	.0021	.0007
:45	.370	.117							5:00	.0010	.0003
:50	.338	.107							6:00	0	0
:55	.288	.0908									
4:00	.249	.0785									
:05	.200	.0630									
:10	.162	.0511									
:20	.108	.0340									

TABLE 45.—Run-off from watershed 11 for selected storms, 1938-39

[Area 3.23 acres, rainfall measured at recording rain gage 82]

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.05 INCHES			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.97 INCH—Con.		
Mar. 28			Apr. 15			Apr. 15			May 17		
p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
4:00	0	0	9:43	0.0055	0.0017	3:20	1.38	.424	8:15	0.0648	0.0199
:05	.0036	.0011	:45	.0074	.0023	:25	1.32	.406	:20	.0538	.0165
:10	.0045	.0014	:48	.0117	.0036	:30	1.16	.356	:25	.0439	.0135
:13	.0036	.0011	:50	.0112	.0034	:35	1.03	.316	:30	.0378	.0116
:15	.0020	.0006	:51	.0130	.0040	:40	.944	.290	:35	.0288	.0088
:16	.0020	.0006	:52	.0130	.0040	:45	.858	.264	:40	.0288	.0088
:18	.0028	.0009	:55	.0109	.0033	:50	.749	.230	:45	.0261	.0080
:20	.0210	.0064	10:00	.0090	.0028	:55	.633	.194	:47	.0261	.0080
:21	.0477	.0146	:03	.0090	.0028	:57	.608	.187	:50	.0234	.0072
:22	.0490	.0150	:05	.0109	.0033	4:00	.527	.162	:55	.0164	.0050
:23	.0428	.0132	:10	.0148	.0045	:05	.422	.130	9:00	.0124	.0038
:24	.0418	.0128	:11	.0148	.0045	:10	.322	.0990	:05	.0124	.0038
:25	.0385	.0118	:15	.0452	.0139	:15	.264	.0811	:10	.0089	.0027
:26	.0321	.0099	:17	.0590	.0181	:20	.220	.0676	:15	.0089	.0027
:28	.0288	.0094	:20	.141	.0433	:25	.181	.0556	:20	.0073	.0022
:30	.0234	.0072	:25	.170	.0522	:30	.151	.0464	:25	.0059	.0018
:32	.0186	.0057	:28	.170	.0522	:35	.134	.0412	:30	.0045	.0014
:34	.0143	.0044	:30	.203	.0624	:40	.118	.0363	:35	.0033	.0010
:35	.0124	.0038	:32	.255	.0784	:45	.103	.0317	:45	.0021	.0006
:40	.0105	.0032	:34	.263	.0808	:50	.0940	.0289	10:00	.0014	.0004
:45	.0105	.0032	:35	.263	.0808	:55	.0896	.0275	11:00	.0014	.0004
:50	.0105	.0032	:38	.279	.0857	5:00	.0809	.0249			
:55	.0105	.0032	:40	.287	.0882	:05	.0780	.0240			
5:00	.0105	.0032	:45	.272	.0836	:06	.0780	.0240			
:05	.0105	.0032	:50	.249	.0765	:10	.112	.0344			
:10	.0105	.0032	:55	.228	.0701	:15	.189	.0581			
:15	.0105	.0032	11:00	.193	.0593	:20	.216	.0664			
:20	.0105	.0032	:02	.189	.0581	:25	.235	.0722			
:22	.0164	.0050	:05	.189	.0581	:30	.214	.0658			
:24	.0186	.0057	:10	.177	.0544	:35	.200	.0615			
:25	.0186	.0057	:15	.177	.0544	:40	.187	.0575			
:30	.0234	.0072	:20	.177	.0544	:45	.156	.0479			
:35	.0210	.0064	:22	.170	.0522	:50	.140	.0430			
:40	.0186	.0057	:25	.183	.0562	:55	.123	.0378			
:45	.0164	.0050	:30	.189	.0581	6:00	.108	.0332			
:50	.0143	.0044	:35	.210	.0645	:15	.0726	.0223			
:55	.0124	.0038	:40	.220	.0676	:30	.0538	.0165			
6:00	.0124	.0038	:45	.214	.0658	:45	.0407	.0125			
:05	.0105	.0032	:50	.193	.0593	7:00	.0318	.0098			
:10	.0105	.0032	:55	.156	.0479	:30	.0210	.0064			
:15	.0105	.0032	12:00	.145	.0446	:30	.0124	.0038			
:20	.0105	.0032				:30	.0089	.0027			
:25	.0105	.0032				9:00	.0059	.0018			
:30	.0105	.0032				10:00	.0014	.0004			
:35	.0091	.0028				11:00	.0003	.0001			
:40	.0105	.0032				:30	0	0			
:45	.0116	.0036									
:46	.0116	.0036									
:50	.0143	.0044									
:55	.0143	.0044									
7:00	.0143	.0044									
:05	.0143	.0044									
:10	.0143	.0044									
:15	.0143	.0044									
:20	.0124	.0038									
:25	.0124	.0038									
:30	.0124	.0038									
:45	.0089	.0027									
8:00	.0059	.0018									
:30	.0021	.0006									
9:00	.0006	.0002									
:30	.0003	.0001									
10:00	0	0									
STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.97 INCH			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.97 INCH			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.42 INCH		
Apr. 15			May 17			May 17			May 18		
a. m.			a. m.			a. m.			a. m.		
8:42	0	0	6:42	0	0	6:50	0	0	6:50	0	0
:45	.0015	.0005	:43	.0694	.0213	:51	.0014	.0004	:51	.0014	.0004
:50	.0018	.0006	:44	.138	.0426	:52	.0025	.0008	:52	.0025	.0008
9:00	.0018	.0006	:45	.210	.0647	:53	.0076	.0023	:53	.0076	.0023
:03	.0018	.0006	:46	.304	.0936	:54	.0217	.0067	:54	.0217	.0067
:05	.0015	.0005	:47	.394	.121	:55	.0385	.0118	:55	.0385	.0118
:10	.0011	.0003	:48	.394	.121	:56	.0468	.0144	:56	.0468	.0144
:15	.0018	.0006	:49	.532	.164	:57	.0756	.0232	:57	.0756	.0232
:20	.0028	.0009	:50	.575	.177	:58	.102	.0313	:58	.102	.0313
:22	.0015	.0005	:52	.624	.192	:59	.304	.0934	:59	.304	.0934
:23	.0023	.0007	:55	.727	.224	7:00	.320	.0983	7:00	.320	.0983
:25	.0019	.0006	:57	.796	.245	:01	.312	.0959	:01	.312	.0959
:27	.0023	.0007	:58	.782	.240	:02	.338	.104	:02	.338	.104
:30	.0023	.0007	:59	.658	.202	:03	.334	.103	:03	.334	.103
:31	.0021	.0006	:06	.621	.191	:04	.590	.181	:04	.590	.181
:33	.0019	.0006	:08	.584	.180	:05	1.55	.476	:05	1.55	.476
:35	.0019	.0006	:10	.516	.159						
:37	.0023	.0007	:11	.484	.149						
:40	.0019	.0006	:13	.403	.124						
:41	.0020	.0006	:15	.356	.110						
			:19	.305	.0937						
			:20	.280	.0860						
			:22	.262	.0807						
			:25	.240	.0739						
			:27	.220	.0676						
			:30	.200	.0615						
			:35	.168	.0516						
			:38	.140	.0430						
			:40	.119	.0367						
			:45	.100	.0309						
			:50	.103	.0317						
			:55	.0858	.0264						
			:56	.103	.0317						
			8:00	.0940	.0289						
			:05	.0851	.0262						
			:10	.0726	.0224						

TABLE 45.—Run-off from watershed 11 for selected storms, 1938-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAY 18, 1939, TOTAL RAINFALL 0.42 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.42 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.89 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.89 INCH—Con.		
May 18			May 18			May 20			May 20		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
7:06	1.68	0.516	8:40	0.0318	0.0098	1:10	0.0586	0.0180	2:05	0.553	0.170
:07	1.72	.529	:50	.0261	.0080	:11	.0811	.0249	:10	.432	.133
:08	1.67	.513	9:00	.0210	.0064	:13	.0955	.0293	:15	.330	.101
:09	1.63	.501	:15	.0124	.0038	:14	.0907	.0279	:20	.249	.0765
:10	1.61	.495	:30	.0089	.0027	:15	.114	.0352	:25	.187	.0574
:15	1.33	.409	:45	.0059	.0018	:16	.132	.0407	:30	.150	.0462
:18	1.08	.332	10:00	.0033	.0010	:17	.179	.0550	:35	.118	.0362
:20	.953	.293	:30	.0014	.0004	:18	.312	.0959	:40	.0940	.0289
:22	.833	.256	11:00	.0002	.0001	:19	.607	.187	:50	.0686	.0211
:24	.710	.218	11:30	0	0	:20	.830	.255	3:00	.0504	.0155
:25	.633	.194	STORM OF MAY 20, 1939, TOTAL RAINFALL 0.89 INCH			:21	1.02	.314	:15	.0318	.0098
:30	.442	.136	May 20			:25	1.48	.455	:30	.0210	.0064
:35	.305	.0936	a. m.			:30	1.83	.563	:45	.0143	.0044
:40	.228	.0699	1:08	0	0	:35	1.76	.542	4:00	.0105	.0032
:45	.174	.0536	:09	.0163	.0050	:40	1.56	.480	:30	.0059	.0018
:50	.140	.0429				:45	1.27	.391	5:00	.0033	.0010
:55	.113	.0347				:50	1.03	.317	6:00	.0014	.0004
8:00	.0940	.0289				:55	.883	.272	7:00	.0006	.0002
:10	.0726	.0224				2:00	.662	.204	8:00	.0003	.0001
:20	.0574	.0176				:03	.573	.176	10:00	0	0
:30	.0439	.0135									

TABLE 46.—Run-off from watershed 12 for selected storms, 1937-39

[Area 2.97 acres, rainfall measured at recording rain gage 70]

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.45 INCHES			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.45 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.45 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.45 INCHES—Con.		
Jan. 23			Jan. 23			Jan. 23			Jan. 23		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
1:23	0	0	3:13	0.515	0.172	5:55	0.434	0.145	9:05	0.857	0.286
:25	.007	.0023	:15	.504	.168	6:00	.444	.148	:10	.731	.244
:30	.006	.0020	:20	.469	.156	:05	.465	.155	:15	.608	.203
:35	.005	.0017	:24	.438	.146	:10	.476	.159	:20	.546	.182
:40	.003	.0010	:25	.434	.145	:15	.497	.166	:25	.501	.167
:45	.005	.0017	:26	.426	.142	:20	.548	.183	:30	.473	.158
:46	.005	.0017	:28	.447	.149	:25	.592	.197	:35	.422	.141
:48	.006	.0020	:30	.448	.149	:30	.603	.201	:40	.374	.125
:50	.010	.0033	:35	.428	.143	:35	.610	.203	:45	.330	.110
:51	.008	.0027	:40	.399	.133	:40	.616	.205	:50	.296	.0987
:53	.006	.0020	:42	.392	.131	:45	.610	.203	:55	.264	.0880
:55	.005	.0017	:45	.388	.129	:50	.616	.205	10:00	.238	.0794
:57	.013	.0043	:47	.426	.142	:55	.616	.205	:05	.220	.0734
2:00	.018	.0060	:49	.522	.174	7:00	.592	.197	:10	.193	.0644
:03	.018	.0060	:50	.542	.181	:05	.527	.176	:15	.174	.0580
:04	.057	.0190	:55	.603	.201	:10	.484	.161	:20	.156	.0520
:05	.076	.0253	:57	.603	.201	:15	.422	.141	:25	.140	.0467
:06	.076	.0253	4:00	.580	.193	:20	.365	.122	:30	.128	.0427
:08	.087	.0290	:05	.569	.190	:22	.352	.117	:35	.113	.0377
:10	.097	.0323	:10	.560	.187	:24	.358	.119	:40	.103	.0343
:13	.110	.0367	:15	.565	.188	:25	.353	.118	:45	.094	.0313
:15	.110	.0367	:19	.603	.201	:30	.339	.113	:50	.085	.0283
:20	.105	.0350	:20	.603	.201	:35	.322	.107	:55	.077	.0257
:21	.108	.0360	:24	.580	.193	:40	.288	.0960	11:00	.073	.0243
:23	.098	.0327	:25	.580	.193	:45	.264	.0880	:05	.065	.0217
:24	.108	.0360	:30	.588	.196	:50	.249	.0830	:10	.057	.0190
:25	.113	.0377	:31	.588	.196	:52	.242	.0807	:15	.054	.0180
:28	.124	.0414	:35	.576	.192	:55	.242	.0807	:20	.050	.0167
:30	.128	.0427	:40	.580	.193	:58	.235	.0784	:25	.047	.0157
:35	.147	.0490	:45	.569	.190	8:00	.238	.0794	:26	.047	.0157
:40	.168	.0560	:50	.569	.190	:05	.260	.0867	:29	.056	.0187
:43	.190	.0634	:55	.576	.192	:10	.276	.0920	:30	.060	.0200
:45	.194	.0647	:56	.576	.192	:15	.318	.106	:35	.064	.0213
:47	.201	.0670	5:00	.569	.190	:20	.372	.124	:40	.069	.0230
:48	.194	.0647	:05	.542	.181	:25	.440	.147	:42	.069	.0230
:50	.204	.0680	:10	.519	.173	:30	.486	.162	:45	.072	.0240
:51	.204	.0680	:15	.508	.169	:33	.519	.173	:50	.091	.0303
:52	.233	.0777	:20	.490	.163	:35	.568	.189	:55	.103	.0343
:53	.248	.0827	:25	.480	.160	:37	.592	.197	12:00	.103	.0343
:54	.298	.0994	:30	.469	.156	:40	.673	.224			
:55	.344	.115	:31	.459	.153	:41	.699	.233	p. m.		
:56	.379	.126	:35	.455	.152	:45	.866	.289	12:05	.103	.0343
:58	.408	.136	:40	.455	.152	:50	1.02	.342	:10	.103	.0343
3:00	.408	.136	:43	.459	.153	:53	1.04	.348	:15	.099	.0330
:05	.455	.152	:45	.438	.146	:55	1.04	.348	:20	.099	.0330
:10	.497	.166	:50	.434	.145	9:00	.979	.326	:25	.094	.0313

TABLE 46.—Run-off from watershed 12 for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.45 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.45 INCHES—Con.			STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.50 INCHES—Con.			STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.10 INCHES—Con.		
Jan. 23			Jan. 24			Feb. 16			Mar. 28		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>
12:30	0.090	0.0300	1:00	0.004	0.0013	5:10	0.0686	0.0229	6:36	0.0008	0.0003
1:35	.090	.0300	2:00	.004	.0013	15	.0538	.0179	40	.0023	.0008
2:40	.085	.0283	3:00	.004	.0013	20	.0471	.0157	42	.0024	.0008
3:45	.085	.0283	4:00	.004	.0013	25	.0407	.0136	44	.0012	.0004
4:50	.085	.0283	5:00	.002	.0007	30	.0348	.0116	45	.0012	.0004
5:55	.077	.0257	6:00	.001	.0003	35	.0318	.0106	46	.0012	.0004
7:00	.069	.0230	7:00	.001	.0003	40	.0288	.0096	48	.0011	.0004
8:05	.061	.0203	8:00	0	0	45	.0261	.0087	50	.0011	.0004
9:10	.061	.0203	9:00	0	0	50	.0234	.0078	55	.0010	.0003
10:15	.057	.0190	10:00	0	0	55	.0210	.0070	7:00	.0010	.0003
11:20	.054	.0180	11:00	0	0	6:00	.0186	.0062	8:00	.0006	.0002
12:25	.050	.0167	12:00	0	0	15	.0143	.0048	9:00	0	0
1:30	.047	.0157	1:00	0	0	30	.0143	.0048			
2:35	.044	.0147	2:00	0	0	45	.0089	.0030			
3:40	.041	.0137	3:00	0	0	7:00	.0073	.0024			
4:45	.035	.0117	4:00	0	0	8:00	.0033	.0011			
5:50	.032	.0107	5:00	0	0	9:00	.0013	.0004			
6:55	.029	.0097	6:00	0	0	10:00	.0006	.0002			
8:00	.023	.0077	8:00	0	0	11:00	0	0			
9:05	.021	.0070	9:00	0	0						
10:10	.021	.0070	10:00	0	0						
11:15	.021	.0070	11:00	0	0						
12:20	.021	.0070	12:00	0	0						
1:25	.019	.0063	1:00	0	0						
2:30	.019	.0063	2:00	0	0						
3:35	.019	.0063	3:00	0	0						
4:40	.019	.0063	4:00	0	0						
5:45	.016	.0053	5:00	0	0						
6:50	.014	.0047	6:00	0	0						
7:55	.014	.0047	7:00	0	0						
9:00	.014	.0047	8:00	0	0						
10:05	.014	.0047	9:00	0	0						
11:10	.012	.0040	10:00	0	0						
12:15	.012	.0040	11:00	0	0						
1:20	.012	.0040	12:00	0	0						
2:25	.019	.0063	1:00	0	0						
3:30	.025	.0083	2:00	0	0						
4:35	.039	.0130	3:00	0	0						
5:40	.043	.0143	4:00	0	0						
6:45	.047	.0157	5:00	0	0						
7:50	.074	.0247	6:00	0	0						
8:55	.118	.0393	7:00	0	0						
10:00	.159	.0530	8:00	0	0						
11:05	.204	.0680	9:00	0	0						
12:10	.245	.0817	10:00	0	0						
1:15	.276	.0920	11:00	0	0						
2:20	.284	.0947	12:00	0	0						
3:25	.280	.0934	1:00	0	0						
4:30	.264	.0880	2:00	0	0						
5:35	.242	.0807	3:00	0	0						
6:40	.220	.0734	4:00	0	0						
7:45	.200	.0667	5:00	0	0						
8:50	.181	.0604	6:00	0	0						
9:55	.162	.0540	7:00	0	0						
11:00	.145	.0484	8:00	0	0						
12:05	.142	.0474	9:00	0	0						
1:10	.147	.0490	10:00	0	0						
2:15	.156	.0520	11:00	0	0						
3:20	.156	.0520	12:00	0	0						
4:25	.150	.0500	1:00	0	0						
5:30	.145	.0484	2:00	0	0						
6:35	.140	.0467	3:00	0	0						
7:40	.134	.0447	4:00	0	0						
8:45	.103	.0343	5:00	0	0						
9:50	.081	.0270	6:00	0	0						
10:55	.061	.0203	7:00	0	0						
12:00	.050	.0167	8:00	0	0						
1:05	.044	.0147	9:00	0	0						
2:10	.038	.0127	10:00	0	0						
3:15	.032	.0107	11:00	0	0						
4:20	.023	.0077	12:00	0	0						
5:25	.021	.0070	1:00	0	0						
6:30	.021	.0070	2:00	0	0						
7:35	.019	.0063	3:00	0	0						
8:40	.019	.0063	4:00	0	0						
9:45	.016	.0053	5:00	0	0						
10:50	.014	.0047	6:00	0	0						
11:55	.014	.0047	7:00	0	0						
1:00	.012	.0040	8:00	0	0						
2:05	.010	.0033	9:00	0	0						
3:10	.010	.0033	10:00	0	0						
4:15	.009	.0030	11:00	0	0						
5:20	.009	.0030	12:00	0	0						
6:25	.007	.0023	1:00	0	0						
7:30	.007	.0023	2:00	0	0						
8:35	.005	.0017	3:00	0	0						
9:40	.005	.0017	4:00	0	0						
10:45	.005	.0017	5:00	0	0						
11:50	.005	.0017	6:00	0	0						
12:55	.005	.0017	7:00	0	0						
1:00	.005	.0017	8:00	0	0						
2:05	.005	.0017	9:00	0	0						
3:10	.005	.0017	10:00	0	0						
4:15	.005	.0017	11:00	0	0						
5:20	.005	.0017	12:00	0	0						
6:25	.005	.0017	1:00	0	0						
7:30	.005	.0017	2:00	0	0						
8:35	.005	.0017	3:00	0	0						
9:40	.005	.0017	4:00	0	0						
10:45	.005	.0017	5:00	0	0						
11:50	.005	.0017	6:00	0	0						
12:55	.005	.0017	7:00	0	0						
1:00	.005	.0017	8:00	0	0						
2:05	.005	.0017	9:00	0	0						
3:10	.005	.0017	10:00	0	0						
4:15	.005	.0017	11:00	0	0						
5:20	.005	.0017	12:00	0	0						
6:25	.005	.0017	1:00	0	0						
7:30	.005	.0017	2:00	0	0						
8:35	.005	.0017	3:00	0	0						
9:40	.005	.0017	4:00	0	0						
10:45	.005	.0017	5:00	0	0						
11:50	.005	.0017	6:00	0	0						
12:55	.005	.0017	7:00	0	0						
1:00	.005	.0017	8:00	0	0						
2:05	.005	.0017	9:00	0	0						
3:10	.005	.0017	10:00	0	0						
4:15	.005	.0017	11:00	0	0						
5:20	.005	.0017	12:00	0	0						
6:25	.005	.0017	1:00	0	0						
7:30	.005	.0017	2:00	0	0						
8:35	.005	.0017	3:00	0	0						
9:40	.005	.0017	4:00	0	0						
10:45	.005	.0017	5:00	0	0						
11:50	.005	.0017	6:00	0	0						
12:55	.005	.0017	7:00	0	0						
1:00	.005	.0017	8:00	0	0						
2:05	.005	.0017	9:00	0	0						
3:10	.005	.0017	10:00	0	0						
4:15	.005	.0017	11:00	0	0						
5:20	.005	.0017	12:00	0	0						
6:25	.005	.0017	1:00	0	0						
7:30	.005	.0017	2:00	0	0						
8:35	.005	.0017	3:00	0	0						
9:40	.005	.0017	4:00	0	0						
10:45	.005	.0017	5:00	0	0						
11:50	.005	.0017	6:00	0	0						
12:55	.005	.0017	7:00	0	0						
1:00	.005	.0017	8:00	0	0						
2:05	.005	.0017	9:00	0	0						
3:10	.005	.0017	10:00	0	0						
4:15	.005	.0017	11:00	0	0						
5:20	.005	.0017	12:00	0	0						
6:25	.005	.0017	1:00	0	0						
7:30	.005	.0017	2:00	0	0						

TABLE 46.—Run-off from watershed 12 for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF APR. 15, 1938, TOTAL RAINFALL 2.29 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.29 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.29 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.29 INCHES—Con.		
Apr. 15			Apr. 15			Apr. 15			Apr. 15		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>
12:55-----	0.0073	0.0024	0.0231	2:45-----	0.0809	0.0270	0.0330	3:50-----	0.256	0.0854	0.1005
1:00-----	.0059	.0020	.0233	:50-----	.0686	.0229	.0351	:55-----	.235	.0784	.1073
:15-----	.0039	.0013	.0237	:54-----	.0686	.0229	.0366	4:00-----	.214	.0714	.1135
:49-----	.0039	.0013	.0244	:55-----	.0797	.0266	.0370	:05-----	.187	.0624	.1191
:50-----	.0043	.0014	.0244	:57-----	.0860	.0287	.0379	:10-----	.168	.0560	.1240
:53-----	.0074	.0025	.0246	:58-----	.0890	.0297	.0384	:15-----	.145	.0484	.1284
:55-----	.0046	.0015	.0247	3:00-----	.120	.0400	.0396	:20-----	.128	.0427	.1322
2:00-----	.0027	.0009	.0248	:05-----	.131	.0437	.0431	:25-----	.118	.0393	.1356
:05-----	.0059	.0020	.0250	:08-----	.158	.0527	.0455	:30-----	.0986	.0329	.1386
:10-----	.0059	.0020	.0252	:10-----	.168	.0560	.0473	:35-----	.0851	.0284	.1412
:13-----	.0095	.0032	.0253	:13-----	.187	.0624	.0503	:40-----	.0767	.0256	.1434
:15-----	.0095	.0032	.0254	:15-----	.212	.0707	.0525	:45-----	.0686	.0229	.1454
:20-----	.0095	.0032	.0257	:18-----	.227	.0757	.0562	:50-----	.0610	.0203	.1472
:21-----	.0062	.0021	.0258	:20-----	.238	.0794	.0588	:55-----	.0538	.0179	.1488
:22-----	.0188	.0063	.0259	:25-----	.242	.0807	.0655	5:00-----	.0538	.0179	.1503
:23-----	.0231	.0077	.0260	:26-----	.235	.0784	.0668	:05-----	.0481	.0160	.1517
:25-----	.0207	.0069	.0262	:30-----	.238	.0794	.0721	:06-----	.0458	.0153	.1520
:28-----	.0217	.0072	.0266	:35-----	.245	.0817	.0788	:09-----	.0564	.0188	.1528
:30-----	.0398	.0133	.0269	:38-----	.245	.0817	.0829	:10-----	.0564	.0188	.1531
:32-----	.0576	.0192	.0274	:40-----	.264	.0880	.0857	:15-----	.0574	.0191	.1547
:35-----	.0755	.0252	.0285	:42-----	.272	.0907	.0887	:20-----	.0538	.0179	.1562
:40-----	.0851	.0284	.0307	:45-----	.272	.0907	.0932	:25-----	.0538	.0179	.1577

TABLE 47.—Run-off from watershed 13 for selected storms 1938-39

[Area 3.19 acres, rainfall measured at recording rain gage 70]

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.10 INCHES			STORM OF MAR. 28, 1938, TOTAL RAINFALL 1.10 INCHES—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.29 INCHES—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.29 INCHES—Con.		
Mar. 28			Mar. 28			Apr. 15			Apr. 15		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In.</i>
3:47-----	0	0	5:50-----	0.0073	0.0023	0.2704	12:40-----	0.0033	3:31-----	0.168	0.0522
:48-----	.116	.0360	.0003	:55-----	.0073	.0023	.2706	:45-----	.0021	.203	.0631
:49-----	.0470	.0146	.0007	6:00-----	.0059	.0018	.2708	:50-----	.0006	.0002	.0017
:50-----	.0203	.0063	.0009	:05-----	.0059	.0018	.2710	:53-----	.0045	.0014	.0018
:51-----	.0371	.0115	.0010	:10-----	.0059	.0018	.2712	:55-----	.0051	.0016	.0019
:52-----	.0301	.0094	.0012	:15-----	.0045	.0014	.2713	:58-----	.0071	.0022	.0019
:53-----	.357	.111	.0022	:20-----	.0045	.0014	.2715	1:00-----	.0063	.0020	.0020
:54-----	.600	.186	.0047	:25-----	.0045	.0014	.2716	:02-----	.0105	.0033	.0021
:55-----	.884	.275	.0085	:30-----	.0055	.0017	.2717	:03-----	.0198	.0062	.0022
:56-----	1.26	.392	.0141	:35-----	.0081	.0025	.2719	:04-----	.0359	.0112	.0023
:57-----	1.51	.469	.0218	:40-----	.0098	.0030	.2721	:05-----	.0391	.0121	.0025
:58-----	1.29	.401	.0285	:45-----	.0090	.0028	.2723	:08-----	.0351	.0109	.0031
4:00-----	.892	.277	.0398	:50-----	.0143	.0044	.2726	:10-----	.0558	.0173	.0036
:02-----	.671	.209	.0479	:55-----	.0124	.0038	.2729	:13-----	.0600	.0186	.0045
:03-----	.621	.193	.0512	7:00-----	.0105	.0033	.2732	:15-----	.0484	.0150	.0051
:05-----	.484	.150	.0569	:10-----	.0045	.0014	.2736	:20-----	.0419	.0130	.0063
:10-----	.403	.125	.0684	:20-----	.0021	.0006	.2738	:25-----	.0358	.0111	.0073
:12-----	.357	.111	.0723	:30-----	.0021	.0006	.2739	:30-----	.0301	.0094	.0081
:15-----	.418	.130	.0783	8:00-----	.0006	.0002	.2741	:35-----	.0244	.0076	.0088
:17-----	.581	.180	.0835	9:00-----	.0003	.0001	.2743	:40-----	.0244	.0076	.0094
:18-----	.793	.246	.0871	10:00-----	0	0	.2744	:45-----	.0225	.0070	.0100
:19-----	.980	.304	.0917	STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.29 INCHES			:47-----	.0244	.0076	.0102	.0105
:20-----	1.29	.401	.0976	Apr. 14			:50-----	.0180	.0056	.0105	.0109
:22-----	1.78	.553	.1135	<i>p. m.</i>	0	0	:55-----	.0149	.0046	.0109	.0113
:24-----	2.46	.764	.1355	Apr. 15			2:00-----	.0124	.0038	.0113	.0116
:25-----	2.25	.699	.1477	<i>a. m.</i>			:05-----	.0105	.0033	.0116	.0118
:30-----	1.59	.494	.1974	12:01-----	.0074	.0023	:10-----	.0089	.0028	.0118	.0120
:32-----	1.24	.385	.2121	:02-----	.0121	.0038	:15-----	.0073	.0023	.0122	.0125
:35-----	.805	.250	.2280	:05-----	.0144	.0045	:20-----	.0124	.0038	.0136	.0137
:37-----	.621	.193	.2354	:08-----	.0126	.0039	:24-----	.0143	.0044	.0137	.0139
:40-----	.442	.137	.2437	:10-----	.0175	.0054	:25-----	.0073	.0023	.0139	.0140
:42-----	.338	.105	.2477	:15-----	.0098	.0030	:26-----	.0261	.0081	.0149	.0151
:45-----	.235	.0730	.2521	:17-----	.0098	.0030	:28-----	.0504	.0156	.0157	.0161
:48-----	.181	.0562	.2553	:20-----	.0064	.0020	:29-----	.0726	.0226	.0157	.0161
:50-----	.145	.0450	.2570	:25-----	.0033	.0010	:30-----	.0986	.0306	.0161	.0167
:55-----	.128	.0398	.2605	:30-----	.0033	.0010		.128	.0398	.0167	
5:00-----	.0836	.0260	.2632								
:05-----	.0686	.0213	.2652								
:10-----	.0471	.0146	.2667								
:15-----	.0348	.0108	.2678								
:20-----	.0234	.0073	.2686								
:25-----	.0164	.0051	.2691								
:30-----	.0124	.0038	.2695								
:35-----	.0105	.0033	.2698								
:40-----	.0089	.0028	.2700								
:45-----	.0089	.0028	.2702								

TABLE 47.—Run-off from watershed 13 for selected storms 1938-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.29 INCHES—Con.			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.29 INCHES—Con.			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.86 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.40 INCH		
Apr. 15			Apr. 15			May 17			May 18		
a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.
9:38.....	1.50	0.466	0.1705	2:58.....	0.641	0.199	0.8675	6:48.....	2.45	0.761	0.2722
10.....	1.50	.466	.1860	.59.....	.459	.143	.8703	.58.....	2.15	.668	.2960
10:40.....	1.32	.410	.2225	3:00.....	.422	.131	.8726	.52.....	1.95	.606	.3172
10:45.....	1.14	.354	.2543	3:01.....	.403	.125	.8747	.53.....	1.64	.510	.3265
10:50.....	.876	.272	.2804	3:05.....	.501	.156	.8841	.54.....	1.30	.404	.3341
10:55.....	.769	.239	.2974	3:06.....	.523	.163	.8867	.55.....	1.28	.398	.3408
10:59.....	.801	.249	.3015	3:10.....	.459	.143	.8969	.57.....	1.44	.447	.3549
11:00.....	.873	.271	.3100	3:15.....	.352	.109	.9074	7:00.....	1.19	.370	.3753
11:02.....	.945	.294	.3194	3:20.....	.463	.144	.9180	7:04.....	.877	.272	.3967
11:05.....	.945	.294	.3243	3:25.....	.641	.199	.9323	7:05.....	.819	.254	.4011
11:10.....	1.34	.416	.3559	3:28.....	.463	.144	.9409	7:10.....	.608	.189	.4196
11:11.....	1.44	.447	.3611	3:30.....	.452	.140	.9456	7:12.....	.516	.160	.4254
11:15.....	1.19	.370	.3883	3:33.....	.361	.112	.9519	7:13.....	.422	.131	.4278
11:20.....	1.20	.373	.4192	3:35.....	.357	.111	.9556	7:15.....	.374	.116	.4319
11:23.....	1.23	.382	.4381	3:40.....	.463	.144	.9662	7:16.....	.304	.0946	.4337
11:25.....	1.13	.351	.4503	3:43.....	.474	.147	.9735	7:20.....	.264	.0820	.4396
11:30.....	.888	.276	.4764	3:45.....	.442	.137	.9782	7:25.....	.235	.0730	.4461
11:32.....	.937	.291	.4858	3:50.....	.313	.0972	.9880	7:30.....	.168	.0522	.4513
11:34.....	1.35	.419	.4976	3:55.....	.193	.0600	.9946	7:35.....	.140	.0433	.4553
11:35.....	1.44	.447	.5048	4:00.....	.123	.0382	.9987	7:39.....	.108	.0336	.4579
11:36.....	1.48	.460	.5124	4:05.....	.0940	.0292	1.0015	7:40.....	.100	.0311	.4584
11:38.....	1.36	.422	.5271	4:10.....	.0767	.0238	1.0037	7:45.....	.0926	.0288	.4609
11:40.....	1.25	.388	.5406	4:15.....	.0610	.0190	1.0055	7:50.....	.0986	.0306	.4634
11:43.....	1.15	.357	.5592	4:20.....	.0538	.0167	1.0070	7:55.....	.0820	.0255	.4657
11:45.....	1.05	.326	.5706	4:25.....	.0471	.0146	1.0083	8:00.....	.0940	.0292	.4680
11:47.....	.922	.286	.5808	4:30.....	.0471	.0146	1.0095	8:05.....	.0940	.0292	.4704
11:48.....	.862	.268	.5854	4:35.....	.0439	.0136	1.0107	8:10.....	.0851	.0264	.4727
11:50.....	.696	.216	.5935	4:40.....	.0439	.0136	1.0118	8:15.....	.0767	.0238	.4748
11:51.....	.645	.200	.5970	4:45.....	.0378	.0117	1.0128	8:20.....	.0726	.0226	.4767
11:55.....	.463	.144	.6085	4:50.....	.0348	.0108	1.0137	8:25.....	.0726	.0226	.4786
11:57.....	.384	.119	.6129	5:05.....	.0648	.0202	1.0168	8:30.....	.0648	.0202	.4804
12:00.....	.280	.0870	.6181	5:06.....	.0986	.0306	1.0172	8:35.....	.0648	.0202	.4821
12:05.....	.216	.0671	.6245	5:07.....	.145	.0450	1.0179	8:40.....	.0574	.0178	.4837
12:10.....	.235	.0730	.6268	5:08.....	.220	.0684	1.0188	8:45.....	.0574	.0178	.4852
12:12.....	.207	.0643	.6302	5:10.....	.296	.0920	1.0215	9:00.....	.0471	.0146	.4892
12:15.....	.150	.0466	.6348	5:13.....	.338	.105	1.0264	9:10.....	.0348	.0108	.4913
12:17.....	.139	.0432	.6363	5:15.....	.264	.0820	1.0295	9:15.....	.0261	.0081	.4921
12:20.....	.150	.0466	.6385	5:18.....	.193	.0600	1.0331	9:20.....	.0234	.0073	.4927
12:25.....	.173	.0537	.6427	5:20.....	.156	.0485	1.0349	9:25.....	.0186	.0058	.4933
12:30.....	.272	.0845	.6485	5:25.....	.0986	.0306	1.0382	9:30.....	.0143	.0044	.4937
12:35.....	.326	.101	.6562	5:30.....	.0726	.0226	1.0404	9:45.....	.0073	.0023	.4946
12:37.....	.347	.108	.6597	5:35.....	.0504	.0156	1.0420	10:00.....	.0033	.0010	.4950
12:40.....	.313	.0972	.6648	5:40.....	.0439	.0136	1.0432	10:10.....	.0014	.0004	.4951
12:45.....	.235	.0730	.6719	5:45.....	.0378	.0117	1.0442	10:20.....	.0014	.0004	.4952
12:50.....	.168	.0522	.6771	5:50.....	.0348	.0108	1.0451	10:30.....	.0006	.0002	
12:55.....	.128	.0398	.6809	5:55.....	.0318	.0098	1.0460	11:00.....	.0003	.0001	.4953
12:00.....	.0986	.0306	.6838	6:00.....	.0318	.0098	1.0468	12:00.....	0	0	.4953
				6:05.....	.0288	.0089	1.0476				
				6:10.....	.0288	.0089	1.0483				
				6:15.....	.0261	.0081	1.0490				
				6:20.....	.0261	.0081	1.0497				
				6:25.....	.0234	.0073	1.0503				
				6:30.....	.0234	.0073	1.0509				
				7:00.....	.0124	.0038	1.0541				
				8:00.....	.0073	.0023	1.0571				
				9:00.....	.0045	.0014	1.0589				
				10:00.....	.0021	.0006	1.0599				
				11:00.....	0	.0001	1.0603				
				12:00.....	0	0	1.0605				
p. m.			p. m.			p. m.			p. m.		
12:05.....	.0805	.0251	.6861	12:05.....	.0805	.0251	.6861	12:05.....	.0805	.0251	.6861
13.....	.0726	.0226	.6881	13.....	.0726	.0226	.6881	13.....	.0726	.0226	.6881
15.....	.0648	.0201	.6899	15.....	.0648	.0201	.6899	15.....	.0648	.0201	.6899
20.....	.0574	.0178	.6915	20.....	.0574	.0178	.6915	20.....	.0574	.0178	.6915
25.....	.0504	.0156	.6929	25.....	.0504	.0156	.6929	25.....	.0504	.0156	.6929
30.....	.0504	.0156	.6942	30.....	.0504	.0156	.6942	30.....	.0504	.0156	.6942
35.....	.0439	.0136	.6954	35.....	.0439	.0136	.6954	35.....	.0439	.0136	.6954
45.....	.0439	.0136	.6976	45.....	.0439	.0136	.6976	45.....	.0439	.0136	.6976
50.....	.0378	.0117	.6986	50.....	.0378	.0117	.6986	50.....	.0378	.0117	.6986
55.....	.0378	.0117	.6996	55.....	.0378	.0117	.6996	55.....	.0378	.0117	.6996
1:00.....	.0318	.0099	.7005	1:00.....	.0318	.0099	.7005	1:00.....	.0318	.0099	.7005
1:05.....	.0288	.0089	.7013	1:05.....	.0288	.0089	.7013	1:05.....	.0288	.0089	.7013
1:25.....	.0288	.0089	.7041	1:25.....	.0288	.0089	.7041	1:25.....	.0288	.0089	.7041
1:30.....	.0261	.0081	.7048	1:30.....	.0261	.0081	.7048	1:30.....	.0261	.0081	.7048
1:45.....	.0261	.0081	.7069	1:45.....	.0261	.0081	.7069	1:45.....	.0261	.0081	.7069
1:50.....	.0314	.0098	.7077	1:50.....	.0314	.0098	.7077	1:50.....	.0314	.0098	.7077
1:55.....	.0348	.0108	.7086	1:55.....	.0348	.0108	.7086	1:55.....	.0348	.0108	.7086
2:00.....	.0318	.0099	.7095	2:00.....	.0318	.0099	.7095	2:00.....	.0318	.0099	.7095
2:05.....	.0318	.0099	.7103	2:05.....	.0318	.0099	.7103	2:05.....	.0318	.0099	.7103
2:10.....	.0301	.0094	.7111	2:10.....	.0301	.0094	.7111	2:10.....	.0301	.0094	.7111
2:15.....	.0407	.0126	.7120	2:15.....	.0407	.0126	.7120	2:15.....	.0407	.0126	.7120
2:18.....	.0384	.0119	.7126	2:18.....	.0384	.0119	.7126	2:18.....	.0384	.0119	.7126
2:20.....	.0596	.0185	.7131	2:20.....	.0596	.0185	.7131	2:20.....	.0596	.0185	.7131
2:22.....	.120	.0373	.7140	2:22.....	.120	.0373	.7140	2:22.....	.120	.0373	.7140
2:24.....	.193	.0600	.7156	2:24.....	.193	.0600	.7156	2:24.....	.193	.0600	.7156
2:25.....	.249	.0774	.7167	2:25.....	.249	.0774	.7167	2:25.....	.249	.0774	.7167
2:28.....	.331	.103	.7212	2:28.....	.331	.103	.7212	2:28.....	.331	.103	.7212
3:0.....	.501	.156	.7255	3:0.....	.501	.156	.7255	3:0.....	.501	.156	.7255
3:1.....	.633	.197	.7284	3:1.....	.633	.197	.7284	3:1.....	.633	.197	.7284
3:3.....	.484	.150	.7342	3:3.....	.484	.150	.7342	3:3.....	.484	.150	.7342
3:5.....	.596	.185	.7398	3:5.....	.596	.185	.7398	3:5.....	.596	.185	.7398
3:7.....	.645	.200	.7462	3:7.....	.645	.200	.7462	3:7.....	.645	.200	.7462
4:0.....	.848	.264	.7578	4:0.....	.848	.264	.7578	4:0.....	.848	.264	.7578
4:3.....	1.06	.329	.7726	4:3.....	1.06	.329	.7726	4:3.....	1.06	.329	.7726
4:5.....	1.20	.373	.7843	4:5.....	1.20	.373	.7843	4:5.....	1.20	.373	.7843
5:0.....	1.45	.450	.8186	5:0.....	1.45	.450	.8186	5:0.....	1.45	.450	.8186
5:3.....	1.51	.469	.8416	5:3.....	1.51	.469	.8416	5:3.....	1.51	.469	.8416
5:4.....	1.28	.398	.8488	5:4.....	1.28	.398	.8488	5:4.....	1.28	.398	.8488
5:5.....	1.06	.329	.8549	5:5.....	1.06	.329	.8549	5:5.....	1.06	.329	.8549
5:7.....	.706	.219	.8640	5:7.....	.706	.219	.8640	5:7.....	.706	.219	.8640
STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.86 INCH			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.86 INCH			STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.39 INCH			STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.39 INCH		
May 17			May 17			May 17			May 17		
a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.
6:25.....	0	0	0	7:32.....	0	0	0	7:32.....	0	0	0
7:26.....	.0184	.0057	.0002	7:33.....	.0044	.0014	.0001	7:33.....	.0044	.0014	.0001
7:27.....	.0436	.0135	.0002	7:35.....	.0144	.0045	.0001	7:35.....	.0144	.0045	.0001
7:28.....	.0640	.0199	.0005	7:37.....	.0298	.0092	.0003	7:37.....	.0298	.0092	.0003
7:29.....	.110	.0342	.0009	7:40.....	.0526	.0163	.0009	7:40.....	.0526	.0163	.0009
7:30.....	.169	.0525	.0016	7:42.....	.0836	.0260	.0016	7:42.....	.0836	.0260	.0016
7:31.....	.226	.0702	.0026	7:43.....	.105	.0327	.0021	7:43.....	.105	.0327	.0021
7:32.....	.268	.0833	.0039	7:45.....	.139	.0432	.0034	7:45.....	.139	.043	

TABLE 47.—Run-off from watershed 13 for selected storms 1938-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAY 20, 1939, TOTAL RAINFALL 0.85 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.85 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.85 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.85 INCH—Con.		
May 20			May 20			May 20			May 20		
a. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.
1:57	0.238	0.0739	0.4570	2:10	0.119	0.0370	0.4678	2:30	0.0318	0.0099	0.4746
2:00	.183	.0568	.4603	:14	.0809	.0251	.4699	:35	.0318	.0099	.4754
:01	.164	.0510	.4612	:15	.0767	.0238	.4703	:40	.0261	.0081	.4762
:03	.154	.0478	.4628	:20	.0610	.0190	.4721	:45	.0234	.0073	.4768
:05	.146	.0454	.4644	:25	.0439	.0136	.4735	:50	.0186	.0058	.4774
:08	.130	.0404	.4665	:27	.0439	.0136	.4740	:55	.0143	.0044	.4778

TABLE 48.—Run-off from watershed 14 for selected storms, 1939

[Area 3.039 acres, rainfall measured at recording rain gage 56]

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.75 INCH			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 0.75 INCH—Con.			STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.43 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.34 INCH—Con.		
May 17			May 17			May 17			May 17		
a. m.	Sec.-ft.	In. per hr.	In.	a. m.	Sec.-ft.	In. per hr.	In.	p. m.	Sec.-ft.	In. per hr.	In.
6:26	0	0	0	8:15	0.0809	0.0265	0.3690	8:07	0.773	0.253	0.0698
:27	.0051	.0017		:20	.0726	.0238	.3711	:10	.692	.227	.0818
:28	.0099	.0032		:25	.0610	.0200	.3729	:14	.637	.209	.0963
:29	.0058	.0019		:30	.0517	.0169	.3744	:15	.625	.205	.0997
:30	.0138	.0045	.0001	:32	.0483	.0158	.3749	:20	.569	.186	.1160
:31	.0636	.0208	.0003	:33	.0483	.0158	.3752	:25	.432	.141	.1296
:32	.174	.0570	.0009	:35	.0450	.0147	.3757	:30	.322	.105	.1399
:33	.335	.101	.0023	:40	.0418	.0137	.3769	:35	.476	.156	.1508
:34	.512	.168	.0046	:45	.0450	.0147	.3781	:40	.448	.147	.1634
:35	.732	.240	.0080	:47	.0450	.0147	.3786	:45	.347	.114	.1742
:36	.958	.314	.0126	:50	.0378	.0124	.3793	:47	.304	.0997	.1778
:37	1.23	.403	.0186	:55	.0318	.0104	.3806	:50	.227	.0744	.1822
:38	1.61	.527	.0263	:57	.0261	.0085	.3811	:52	.193	.0632	.1845
:39	2.10	.688	.0364	9:00	.0261	.0085	.3811	:55	.150	.0493	.1873
:40	2.81	.920	.0498	:10	.0164	.0054	.3823	9:00	.103	.0338	.1908
:41	3.11	1.02	.0660	:20	.0195	.0034	.3830	:05	.0726	.0238	.1932
:42	3.20	1.05	.0832	:30	.0059	.0019	.3834	:10	.0574	.0188	.1950
:43	3.10	1.02	.1004	:45	.0033	.0011	.3838	:15	.0471	.0154	.1964
:45	2.79	.914	.1325	10:00	.0014	.0004	.3840	:30	.0288	.0094	.1995
:47	2.37	.776	.1607	11:00	.0006	.0002	.3843	:45	.0186	.0061	.2015
:50	1.92	.629	.1958	12:00	.0002	.0001	.3845	10:00	.0124	.0040	.2027
:52	1.70	.557	.2156	p. m.				:15	.0073	.0024	.2035
:55	1.42	.465	.2411	2:00	0	0	.3845	:30	.0045	.0015	.2040
:57	1.28	.419	.2558					11:00	.0021	.0007	.2046
7:00	1.09	.357	.2752					:30	.0006	.0002	.2048
:02	.959	.314	.2864	STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.43 INCH				12:00	0		.2048
:03	.873	.286	.2914	May 17				STORM OF MAY 18, 1939, TOTAL RAINFALL 0.34 INCH			
:05	.719	.235	.3001	p. m.				May 18			
:06	.667	.218	.3039	6:50	0	0	0	a. m.			
:08	.596	.195	.3108	:55	.0010	.0003		6:52	0	0	0
:10	.562	.184	.3171	:55	.0010	.0003		:53	.0130	.0042	
:12	.484	.158	.3228	7:00	.0010	.0003		:54	.0630	.0206	.0002
:15	.384	.126	.3299	:05	.0010	.0003		:55	.1130	.0370	.0007
:16	.356	.117	.3319	:10	.0004	.0001		:56	.162	.0530	.0015
:17	.313	.102	.3337	:15	.0004	.0001		:57	.557	.182	.0035
:18	.296	.0969	.3354	:20	.0008	.0003	.0001	:58	2.06	.674	.0106
:19	.249	.0815	.3369	:25	.0013	.0004		:59	3.25	1.06	.0251
:20	.220	.0720	.3382	:30	.0024	.0008		7:00	3.13	1.02	.0425
:22	.181	.0593	.3404	:31	.0036	.0012	.0002	:01	2.95	.966	.0591
:25	.142	.0465	.3430	:32	.0197	.0064	.0003	:02	2.77	.907	.0747
:26	.145	.0475	.3438	:33	.0408	.0134	.0005	:03	2.57	.841	.0893
:27	.134	.0439	.3446	:34	.0696	.0228	.0008	:04	2.38	.781	.1028
:28	.134	.0439	.3453	:35	.0952	.0312	.0012	:05	2.16	.707	.1152
:30	.117	.0383	.3467	:36	.124	.0406	.0018	:06	1.90	.620	.1263
:33	.103	.0338	.3495	:37	.162	.0530	.0026	:07	1.47	.481	.1355
:35	.0896	.0293	.3496	:38	.194	.0635	.0036	:08	1.24	.406	.1429
:40	.0726	.0238	.3518	:40	.219	.0717	.0059	:09	1.02	.334	.1491
:42	.0686	.0225	.3526	:45	.219	.0717	.0147	:10	.892	.292	.1543
:43	.0726	.0238	.3530	:48	.259	.0848	.0173	:11	.749	.245	.1588
:45	.0661	.0216	.3538	:50	.259	.0848	.0173	:12	.645	.211	.1626
:48	.0560	.0183	.3548	:53	.343	.112	.0222	:13	.474	.155	.1657
:50	.0574	.0188	.3554	:55	.419	.137	.0264	:14	.384	.126	.1680
:52	.0538	.0176	.3560	:57	.503	.165	.0314				
:55	.0767	.0251	.3571	8:00	.628	.206	.0407				
:57	.110	.0360	.3581	:02	.760	.249	.0483				
:59	.131	.0429	.3594	:04	.825	.270	.0569				
8:00	.138	.0452	.3601	:05	.783	.256	.0613				
:05	.118	.0386	.3636								
:10	.0986	.0323	.3666								

TABLE 48.—Run-off from watershed 14 for selected storms, 1939—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF MAY 20, 1939, TOTAL RAINFALL 0.81 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.81 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.81 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.81 INCH—Con.		
May 20			May 20			May 20			May 20		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
1:14-----	1.91	0.625	0.1664	1:45-----	0.773	0.253	0.4009	2:15-----	0.207	0.0678	0.4656
:15-----	1.64	.537	.1858	:50-----	.550	.180	.4189	:15-----	.200	.0655	.4689
:18-----	1.45	.475	.2111	:55-----	.390	.128	.4217	:20-----	.187	.0612	.4710
:20-----	1.58	.517	.2276	2:00-----	.370	.121	.4421	:25-----	.128	.0419	.4753
:21-----	1.60	.524	.2363	:03-----	.309	.101	.4477	:30-----	.103	.0338	.4785
:25-----	1.38	.452	.2688	:05-----	.309	.101	.4511	:35-----	.0851	.0279	.4811
:30-----	1.39	.455	.3066	:06-----	.309	.101	.4528	:40-----	.0686	.0225	.4833
:32-----	1.40	.458	.3218	:08-----	.296	.0969	.4561	:45-----	.0574	.0188	.4849
:35-----	1.28	.419	.3437	:10-----	.280	.0917	.4592	:50-----	.0439	.0144	.4863
:40-----	1.07	.350	.3758	:13-----	.220	.0720	.4633	:55-----	.0348	.0114	.4874

TABLE 49.—Run-off from watershed 16 for selected storms, 1937-39

[Area 3.17 acres, rainfall measured at recording rain gage 69a]

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off			
STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.42 INCHES			STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.42 INCHES—Con.			STORM OF DEC. 22, 1937, TOTAL RAINFALL 1.42 INCHES—Con.			STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.65 INCHES—Con.					
Dec. 22			Dec. 22			Dec. 22			Jan. 23					
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.			
2:15-----	0	0	9:10-----	0.009	0.0028	0.0224	4:45-----	0.054	0.0169	0.1408	2:40-----	0.050	0.0140	0.0138
:20-----	.002	.0006	:15-----	.009	.0028	.0226	5:00-----	.054	.0169	.1450	:45-----	.063	.0197	.0153
:25-----	.009	.0028	:20-----	.008	.0025	.0228	:05-----	.061	.0191	.1465	:47-----	.074	.0232	.0160
:30-----	.012	.0038	:25-----	.008	.0025	.0230	:10-----	.077	.0241	.1483	:50-----	.070	.0219	.0171
:35-----	.017	.0053	:30-----	.015	.0047	.0233	:15-----	.088	.0275	.1505	:55-----	.18	.0563	.0126
:40-----	.017	.0053	:35-----	.015	.0047	.0237	:20-----	.10	.0313	.1529	3:00-----	.22	.0689	.0247
:45-----	.018	.0056	:40-----	.017	.0053	.0241	6:00-----	.10	.0313	.1737	:05-----	.23	.0720	.0306
:50-----	.012	.0038	:45-----	.011	.0034	.0245	:05-----	.088	.0275	.1761	:10-----	.26	.0814	.0370
:52-----	.012	.0038	:50-----	.009	.0028	.0248	:30-----	.088	.0275	.1876	:15-----	.30	.0939	.0443
:55-----	.009	.0028	:52-----	.015	.0047	.0249	:50-----	.077	.0241	.1962	:20-----	.36	.113	.0526
3:00-----	.014	.0044	:53-----	.014	.0044	.0250	7:00-----	.066	.0207	.1999	:24-----	.37	.116	.0603
:05-----	.015	.0047	:55-----	.015	.0047	.0252	:20-----	.054	.0169	.2062	:25-----	.38	.119	.0623
:10-----	.015	.0047	10:00-----	.018	.0056	.0256	8:00-----	.035	.0110	.2155	:30-----	.40	.125	.0727
:15-----	.015	.0047	:05-----	.012	.0038	.0260	9:00-----	.012	.0038	.2229	:35-----	.42	.132	.0834
:20-----	.017	.0053	:10-----	.012	.0038	.0263	10:00-----	.003	.0009	.2253	:40-----	.42	.132	.0944
:25-----	.017	.0053	:15-----	.007	.0022	.0265	11:00-----	0	0	.2257	:45-----	.41	.128	.1052
:30-----	.011	.0034	:16-----	.010	.0031	.0266	STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.65 INCHES			:50-----	.47	.147	.1167	
:35-----	.009	.0028	:20-----	.016	.0050	.0268				:55-----	.49	.153	.1293	
:40-----	.015	.0047	:25-----	.014	.0044	.0272				4:00-----	.49	.153	.1420	
:43-----	.012	.0038	:30-----	.018	.0056	.0276				:05-----	.51	.160	.1550	
:45-----	.020	.0063	:50-----	.012	.0038	.0291				:10-----	.51	.160	.1683	
:50-----	.012	.0038	11:00-----	.012	.0038	.0297				:13-----	.54	.169	.1763	
:55-----	.012	.0038	:15-----	.011	.0034	.0306				:20-----	.54	.169	.1963	
4:00-----	.012	.0038	:30-----	.012	.0038	.0315				:25-----	.51	.160	.2095	
:05-----	.010	.0031	:55-----	.012	.0038	.0331				:30-----	.54	.169	.2236	
:10-----	.016	.0050	:57-----	.011	.0034	.0332				:50-----	.54	.169	.2806	
:13-----	.028	.0088	12:00-----	.006	.0019	.0333				:55-----	.56	.175	.2944	
:15-----	.021	.0066								5:00-----	.56	.175	.3090	
:20-----	.015	.0047								:05-----	.54	.169	.3233	
:25-----	.017	.0053								:10-----	.54	.169	.3373	
:35-----	.017	.0053								:15-----	.51	.160	.3512	
:40-----	.018	.0056								:30-----	.51	.160	.3911	
:55-----	.012	.0038								:35-----	.49	.153	.4041	
5:00-----	.012	.0038								:49-----	.49	.153	.4297	
:30-----	.012	.0038								:54-----	.47	.147	.4397	
6:00-----	.006	.0019								6:15-----	.47	.147	.5037	
:05-----	.006	.0019								:20-----	.49	.153	.5163	
:08-----	.002	.0006								:25-----	.49	.153	.5290	
:10-----	.007	.0022								:30-----	.54	.169	.5424	
:20-----	.017	.0053								:35-----	.51	.160	.5561	
:25-----	.011	.0034								:45-----	.51	.160	.5827	
:30-----	.012	.0038								:50-----	.54	.169	.6164	
:35-----	.011	.0034								7:00-----	.54	.169	.6246	
:40-----	.011	.0034								:05-----	.49	.153	.6380	
:45-----	.012	.0038								:10-----	.44	.138	.6501	
:50-----	.012	.0038								:15-----	.42	.132	.6613	
:55-----	.011	.0034								:20-----	.38	.119	.6717	
7:15-----	.011	.0034								:30-----	.38	.119	.6916	
:20-----	.012	.0038								:35-----	.40	.125	.7018	
:30-----	.006	.0019								:40-----	.40	.125	.7081	
8:00-----	.006	.0019								:42-----	.38	.119	.7122	
:40-----	.003	.0009								:45-----	.36	.113	.7218	
:45-----	.002	.0006								:50-----	.34	.106	.7309	
:50-----	.004	.0012								:55-----	.34	.106	.7398	
:55-----	.006	.0019								8:00-----	.32	.100	.7484	
9:00-----	.003	.0009								:05-----	.32	.100	.7568	
:05-----	.011	.0034								:10-----	.36	.113	.7657	

TABLE 49.—Run-off from watershed 16 for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF JAN. 23, 1938, TOTAL RAINFALL 2.65 INCHES—Con.			STORM OF FEB. 16, 1938, TOTAL RAINFALL 1.51 INCHES			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.11 INCHES			STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.11 INCHES—Con.		
Jan. 23			Feb. 16			Apr. 14			Apr. 15		
a. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
8:15	0.37	0.116	2:29	0	0	11:53	0	0	10:20	1.05	0.329
:20	.41	.128	:30	.022	.0069	:54	.008	.0025	:25	1.03	.322
:25	.44	.138	:32	.018	.0056	:55	.010	.0031	:30	1.02	.319
:30	.43	.135	:35	.012	.0038	:56	.022	.0069	:35	1.10	.344
:35	.43	.135	:40	.015	.0047	:57	.033	.0103	:38	1.26	.394
:40	.50	.156	3:15	.015	.0047	:58	.057	.0178	:40	1.29	.404
:45	.60	.188	:20	.012	.0038	12:00	.060	.0188	:42	1.27	.398
:50	.68	.213	:25	.008	.0025				:45	1.11	.348
:55	.68	.213	:30	.012	.0038				:47	.90	.282
9:00	.66	.207	:40	.012	.0038				:50	.74	.232
:05	.64	.200	:45	.015	.0047	Apr. 15			:55	.49	.153
:10	.56	.175	:55	.015	.0047	a. m.			11:00	.36	.113
:15	.54	.169	4:00	.012	.0038	12:05	.075	.0235	:05	.35	.110
:20	.47	.147	5:30	.018	.0056	:10	.072	.0225	:10	.36	.113
:30	.47	.147	6:00	.012	.0038	:15	.072	.0225	:15	.36	.113
:35	.44	.138	:30	.006	.0019	:20	.061	.0191	:20	.36	.113
:40	.42	.132	12:00	.006	.0019	:25	.064	.0200	:25	.36	.113
:45	.38	.119				:30	.066	.0207	:30	.42	.132
:50	.36	.113				:35	.066	.0207	:35	.67	.210
:55	.34	.106				:40	.054	.0169	:40	.79	.247
10:00	.32	.100				:45	.054	.0169	:45	.77	.241
:05	.30	.0939				:50	.066	.0207	:50	.61	.191
:10	.30	.0939				:55	.069	.0216	:55	.44	.138
:15	.28	.0876				1:00	.078	.0244	:58	.34	.106
:20	.26	.0814				:05	.075	.0235	12:00	.30	.0939
:25	.23	.0720				:10	.078	.0244		.26	.0814
:30	.23	.0720				:15	.075	.0235			
:35	.21	.0657				:20	.083	.0260			
:45	.21	.0657				:25	.072	.0225			
:50	.19	.0595				:30	.077	.0241			
:55	.19	.0595				:35	.064	.0200			
11:00	.18	.0563				:40	.064	.0200			
:05	.16	.0501				:45	.075	.0235			
:10	.16	.0501				:50	.083	.0260			
:15	.16	.0501				2:00	.075	.0235			
:20	.16	.0501				:05	.077	.0241			
:25	.16	.0501				:10	.066	.0207			
:30	.16	.0501				:15	.066	.0207			
:35	.16	.0501				:20	.058	.0182			
:40	.16	.0501				:25	.066	.0207			
:45	.16	.0501				:30	.066	.0207			
:50	.16	.0501				:35	.064	.0200			
:55	.16	.0501				:40	.070	.0219			
12:00	.19	.0595				:45	.072	.0225			
						:50	.072	.0225			
						4:00	.066	.0207			
						:05	.054	.0169			
						:10	.054	.0169			
						:15	.054	.0169			
						:20	.044	.0138			
						:25	.044	.0138			
						:30	.035	.0110			
						:35	.042	.0131			
						5:00	.042	.0131			
						:05	.054	.0169			
						:10	.054	.0169			
						:15	.054	.0169			
						:20	.054	.0169			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						6:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						7:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						8:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						9:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						10:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						11:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						12:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						1:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						2:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						3:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						4:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						5:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			
						:30	.066	.0207			
						:35	.066	.0207			
						6:00	.066	.0207			
						:05	.066	.0207			
						:10	.066	.0207			
						:15	.066	.0207			
						:20	.066	.0207			
						:25	.066	.0207			

TABLE 49.—Run-off from watershed 16 for selected storms, 1937-39—Continued

Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off	Date and time	Discharge	Accu- mu- lated run-off
STORM OF APR. 14-15, 1938, TOTAL RAINFALL 2.11 INCHES—Con.			STORM OF MAY 17, 1939, A. M. TOTAL RAINFALL 0.85 INCH—Con.			STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.41 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.35 INCH—Con.		
Apr. 15			May 17			May 17			May 18		
<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>
5:50-----	0.10	0.0313	1.2276	7:12-----	0.23	0.0720	0.4432	8:15-----	0.61	0.191	0.1277
6:10-----	.10	.0313	1.2380	.14-----	.18	.0563	.4453	.20-----	.54	.167	.1476
.30-----	.088	.0277	1.2478	.15-----	.16	.0501	.4462	.25-----	.34	.106	.1590
.50-----	.077	.0241	1.2564	.18-----	.10	.0313	.4482	.30-----	.24	.0767	.1666
8:00-----	.077	.0241	1.2845	.20-----	.088	.0277	.4492	.35-----	.21	.0658	.1725
.30-----	.066	.0205	1.2957	.25-----	.077	.0241	.4514	.40-----	.18	.0548	.1775
9:00-----	.054	.0169	1.3051	.30-----	.066	.0205	.4533	.44-----	.14	.0454	.1808
11:00-----	.044	.0140	1.3359	.35-----	.066	.0205	.4550	.45-----	.13	.0407	.1815
12:00-----	.044	.0140	1.3499	.40-----	.054	.0169	.4566	.50-----	.088	.0277	.1843
				.45-----	.054	.0169	.4580	.55-----	.077	.0241	.1865
Apr. 16				.50-----	.054	.0169	.4594	9:00-----	.077	.0241	.1885
<i>a. m.</i>				.55-----	.046	.0144	.4607	.30-----	.066	.0205	.1997
2:00-----	.018	.0056	1.3695	8:00-----	.054	.0169	.4620	10:00-----	.054	.0169	.2091
4:00-----	.006	.0019	1.3771	.05-----	.066	.0205	.4636	11:00-----	.044	.0140	.2245
6:00-----	.003	.0010	1.3799	.10-----	.044	.0140	.4650	12:00-----	.044	.0140	.2385
8:00-----	0	0	1.3809	.45-----	.044	.0140	.4731				
				9:00-----	.035	.0110	.4762	May 18			
				.30-----	.026	.0083	.4810	<i>a. m.</i>			
				.45-----	.026	.0083	.4831	3:00-----	.026	.0083	.2721
				.46-----	.012	.0038	.4833	.51-----	.026	.0083	.3041
				.50-----	.012	.0038	.4836	.52-----	.033	.0103	.3048
				10:00-----	.006	.0019	.4841				
				12:00-----	.006	.0019	.4879				
				<i>p. m.</i>							
				6:40-----	.006	.0019	.5006				
				STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.41 INCH			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.35 INCH				
May 17			May 17			May 18			May 18		
<i>a. m.</i>			<i>p. m.</i>			<i>a. m.</i>			<i>a. m.</i>		
6:25-----	0	0	6:40-----	0.006	0.0019	6:52-----	0.033	0.0103	12:38-----	0	0
.26-----	.015	.0047	.45-----	.017	.0053	.53-----	.036	.0113	.39-----	.025	.0078
.27-----	.010	.0031	.50-----	.017	.0053	.54-----	.037	.0116	.40-----	.037	.0116
.28-----	.030	.0094	.55-----	.017	.0053	.55-----	.05	.0156	.43-----	.061	.0191
.29-----	.024	.0075	.7:00-----	.017	.0053	.56-----	1.21	.379	.44-----	.11	.0344
.30-----	.050	.0156	.05-----	.017	.0053	.57-----	2.76	.864	.45-----	.15	.0470
.31-----	.052	.0163	.10-----	.017	.0053	.58-----	2.85	.892	.46-----	.20	.0626
.32-----	.14	.0438	.15-----	.023	.0072	.59-----	3.47	1.09	.47-----	.28	.0876
.33-----	.16	.0501	.20-----	.023	.0072	.01-----	3.75	1.17	.50-----	.23	.0720
.34-----	.21	.0657	.25-----	.030	.0094	.02-----	3.66	1.15	.55-----	.23	.0720
.35-----	.89	.279	.30-----	.08	.0250	.03-----	3.16	.989	.56-----	.42	.132
.36-----	2.67	.836	.35-----	.12	.0376	.04-----	2.79	.873	.59-----	.53	.166
.37-----	3.94	1.28	.40-----	.17	.0532	.05-----	2.72	.852	1:00-----	.69	.216
.38-----	4.94	1.55	.45-----	.25	.0783	.06-----	2.40	.751	.01-----	1.40	.438
.39-----	5.81	1.82	.50-----	.33	.103	.07-----	1.90	.595	.02-----	1.69	.529
.40-----	6.10	1.91	.55-----	.39	.122	.08-----	1.47	.460	.03-----	1.81	.576
.42-----	5.59	1.75	.60-----	.46	.144	.09-----	1.27	.398	.04-----	1.77	.554
.43-----	5.05	1.58	.65-----	.46	.144	.10-----	1.08	.338	.05-----	1.63	.510
.44-----	4.54	1.42	.70-----	.46	.144	.11-----	.96	.300	.06-----	1.29	.404
.45-----	4.00	1.25	.75-----	.42	.132	.12-----	.80	.249	.07-----	1.18	.369
.46-----	3.56	1.11	.80-----	.42	.132	.13-----	.66	.175	.08-----	.96	.300
.47-----	2.98	.933	.85-----	.47	.147	.14-----	.51	.160	.09-----	.86	.250
.49-----	2.72	.852	.90-----	.47	.147	.15-----	.47	.147	.10-----	.56	.175
.51-----	2.39	.748	.95-----	.46	.144	.16-----	.38	.119	.11-----	.50	.154
.52-----	1.96	.614	.01-----	.46	.144	.17-----	.30	.0939	.12-----	.47	.147
.53-----	1.67	.523	.02-----	.46	.144	.18-----	.23	.0720	.13-----	.46	.146
.55-----	1.46	.457	.03-----	.46	.144	.19-----	.19	.0595	.14-----	.46	.146
7:00-----	1.07	.335	.04-----	.46	.144	.20-----	.16	.0501	.15-----	.47	.147
.02-----	.93	.291	.05-----	.46	.144	.22-----	.14	.0454	.16-----	.46	.146
.03-----	.77	.241	.06-----	.46	.144	.23-----	.12	.0360	.17-----	.48	.150
.04-----	.68	.213	.07-----	.46	.144	.25-----	.088	.0277	.18-----	.50	.154
.05-----	.66	.207	.08-----	.46	.144	.30-----	.066	.0205	.19-----	.53	.157
.07-----	.56	.175	.09-----	.46	.144				.20-----	.56	.160
.08-----	.47	.147							.21-----	.57	.162
.09-----	.40	.125							.22-----	.58	.164
.10-----	.34	.106							.23-----	.59	.166

TABLE 50.—Run-off from watershed 17 for selected storms, 1939

[Area 2.99 acres, rainfall measured at recording rain gage W-2]

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF MAY 17, 1939 A. M., TOTAL RAINFALL 0.98 INCH			STORM OF MAY 17, 1939 A. M., TOTAL RAINFALL 0.98 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.38 INCH—Con.			STORM OF MAY 20, 1939, TOTAL RAINFALL 0.89 INCH—Con.		
May 17			May 17			May 18			May 20		
a. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
6:32	0	0	9:00	0.0016	0.0005	7:00	2.32	0.768	1:06	0.0950	0.0315
:33	.0134	.0044	:30	.0010	.0003	:01	2.18	.722	:07	.211	.0700
:34	.0379	.0126	10:00	.0006	.0002	:02	1.91	.633	:08	.418	.139
:35	.0460	.0152	11:00	0	0	:03	1.65	.547	:09	.602	.200
:37	.0466	.0154	STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.44 INCH			:04	1.47	.488	:10	.756	.251
:38	.0930	.0308	May 17			:05	1.29	.428	:11	.906	.301
:40	.301	.0998	a. m.			:06	1.12	.372	:12	1.06	.352
:41	.301	.0998	7:35	0	0	:07	.984	.326	:14	1.12	.372
:42	.476	.158	:38	.0067	.0022	:08	.877	.291	:15	1.14	.375
:43	1.16	.384	:39	.0347	.0115	:09	.777	.258	:18	1.52	.504
:44	1.53	.506	:40	.0657	.0218	:10	.696	.231	:20	1.77	.587
:45	1.52	.504	:42	.0842	.0279	:11	.608	.202	:23	1.99	.660
:47	1.35	.447	:43	.0788	.0261	:13	.495	.164	:25	2.02	.670
:50	1.47	.487	:45	.0925	.0307	:15	.432	.143	:28	1.94	.644
:52	1.53	.506	:50	.121	.0401	:18	.338	.112	:30	1.94	.644
:54	1.39	.464	:53	.149	.0494	:20	.288	.0950	:32	1.94	.644
:55	1.12	.371	:55	.187	.0620	:21	.256	.0851	:35	1.78	.590
7:00	.968	.321	8:00	.248	.0823	:25	.249	.0826	:40	1.62	.537
:02	.828	.275	:05	.314	.104	:27	.242	.0802	:42	1.51	.501
:05	.608	.202	:10	.310	.103	:30	.214	.0708	:45	1.18	.391
:07	.474	.157	:15	.332	.110	:35	.150	.0499	:47	1.04	.345
:08	.374	.124	:20	.390	.129	:40	.118	.0392	:50	.843	.280
:10	.300	.0995	:25	.288	.0955	:45	.0896	.0297	:52	.817	.271
:11	.292	.0968	:30	.200	.0663	:50	.0726	.0241	:55	.963	.319
:13	.208	.0690	:35	.140	.0464	:57	.0538	.0178	1:00	.332	.3989
:15	.178	.0590	:40	.118	.0391	1:00	.0378	.0125	2:00	.848	.281
:18	.139	.0461	:45	.0767	.0254	1:11	.0318	.0106	:05	.621	.206
:20	.118	.0392	:50	.0767	.0254	1:12	.0318	.0106	:08	.608	.202
:21	.108	.0359	10:00	.0089	.0030	1:14	.0261	.0087	:10	.584	.194
:22	.145	.1481	:15	.0045	.0015	1:15	.0234	.0078	:12	.494	.164
:23	.187	.0620	:20	.0021	.0007	1:20	.0186	.0062	:15	.338	.112
:25	.181	.0600	:25	.0010	.0003	1:30	.0143	.0047	:17	.347	.115
:27	.169	.0560	:30	.0006	.0002	1:40	.0105	.0035	:20	.280	.0929
:30	.200	.0663	11:15	0	0	1:50	.0073	.0024	:24	.235	.0779
:32	.162	.0537	12:00	0	0	9:00	.0059	.0020	:25	.235	.0779
:35	.113	.0375	STORM OF MAY 18, 1939, TOTAL RAINFALL 0.38 INCH			:30	.0021	.0007	:26	.207	.0687
:40	.0809	.0268	May 18			10:00	.0010	.0003	:30	.156	.0517
:45	.0713	.0236	a. m.			:30	.0006	.0002	:35	.118	.0393
:50	.0515	.0171	6:53	0	0	11:00	0	0	:40	.0851	.0282
:54	.0471	.0156	:54	.0542	.0180	STORM OF MAY 20, 1939, TOTAL RAINFALL 0.89 INCH			:45	.0610	.0202
:55	.0564	.0187	:55	.136	.0451	May 20			:50	.0471	.0156
8:00	.0570	.0189	:56	.532	.176	a. m.			:55	.0318	.0106
:05	.0648	.0215	:57	1.01	.334	1:03	0	0	3:00	.0210	.0070
:07	.0610	.0202	:58	1.54	.510	:04	.0047	.0016	:05	.0164	.0054
:10	.0504	.0167	:59	2.49	.825	:05	.0387	.0128	:10	.0124	.0041
:15	.0471	.0156	STORM OF MAY 20, 1939, TOTAL RAINFALL 0.89 INCH						:15	.0089	.0030
:20	.0268	.0106	May 20						:30	.0045	.0015
:25	.0186	.0062	a. m.						:45	.0021	.0007
:30	.0124	.0041	1:03	0	0				4:00	.0016	.0005
:35	.0089	.0030	:04	.0047	.0016				:30	.0006	.0002
:40	.0059	.0020	:05	.0387	.0128				5:30	0	0
:45	.0033	.0011									

TABLE 51.—Run-off from watershed 18 for selected storms, 1938-39

[Area 3.04 acres, rainfall measured at recording rain gage 82]

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.25 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.		
Apr. 15			Apr. 15			Apr. 15			Apr. 15		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.
8:42	0	0	10:34	0.096	0.0313	11:25	0.221	0.0721	12:35	0.0986	0.0322
:45	.0104	.0034	:35	.122	.0398	:30	.228	.0744	:40	.0896	.0292
:48	.0038	.0012	:37	.173	.0564	:35	.242	.0789	:45	.0809	.0264
:50	.0104	.0034	:39	.173	.0564	:40	.264	.0861	:50	.0726	.0237
:54	.0099	.0032	:40	.282	.0920	:45	.249	.0812	:55	.0648	.0211
:55	.0147	.0048	:41	.412	.134	:50	.228	.0744	1:00	.0574	.0187
10:00	.0147	.0048	:42	.608	.198	:55	.187	.0610	:05	.0471	.0154
:05	.0099	.0032	:43	.805	.263	:59	.156	.0509	:10	.0378	.0123
:10	.0104	.0034	:45	.862	.281				:15	.0378	.0123
:14	.0289	.0094	:50	.736	.240				:20	.0378	.0123
:15	.0289	.0094	:55	.494	.161				:25	.0348	.0114
:16	.0132	.0043	11:00	.338	.170				:30	.0348	.0114
:18	.0346	.0113	:05	.235	.0767				:35	.0348	.0114
:20	.0780	.0254	:08	.228	.0744				:40	.0318	.0104
:22	.0975	.0318	:10	.242	.0784				:45	.0282	.0092
:25	.0917	.0299	:15	.228	.0744				5:00	.0252	.0082
:30	.111	.0362	:20	.221	.0721						

TABLE 51.—Run-off from watershed 18 for selected storms, 1938-39—Continued

Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off
STORM OF APR 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.			STORM OF APR. 15, 1938, TOTAL RAINFALL 2.28 INCHES—Con.			STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.42 INCH			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.42 INCH—Con.		
Apr. 15			Apr. 15			May 17			May 18		
p. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.
1:55-----	0.0312	0.0102	5:55-----	0.0538	0.0176	7:52-----	0	0	8:15-----	0.0538	0.0176
2:00-----	0.0378	0.0123	6:00-----	0.0504	0.0164	:55-----	0.0039	0.0013	:20-----	0.0439	0.0144
:05-----	0.0378	0.0123	:05-----	0.0471	0.0154	8:00-----	0.0198	0.0064	:30-----	0.0288	0.0094
:09-----	0.0378	0.0123	:10-----	0.0407	0.0133	:01-----	0.0216	0.0070	:40-----	0.0186	0.0061
:10-----	0.0348	0.0114	:15-----	0.0378	0.0123	:02-----	0.0325	0.0106	:50-----	0.0143	0.0047
:15-----	0.0348	0.0114	:20-----	0.0348	0.0113	:03-----	0.0422	0.0138	9:00-----	0.0105	0.0034
:20-----	0.0336	0.0110	:25-----	0.0318	0.0104	:05-----	0.0551	0.0180	:15-----	0.0073	0.0024
:22-----	0.0312	0.0102	:30-----	0.0288	0.0094	:07-----	0.0793	0.0259	:30-----	0.0045	0.0015
:25-----	0.0589	0.0192	:45-----	0.0210	0.0068	:09-----	0.112	0.0366	10:00-----	0.0021	0.0007
:30-----	0.0824	0.0269	7:00-----	0.0164	0.0054	:10-----	0.133	0.0433	:30-----	0.0010	0.0003
:32-----	0.0122	0.0394	:30-----	0.0089	0.0029	:12-----	0.167	0.0544	11:00-----	0.0006	0.0002
:35-----	0.180	0.0587	8:00-----	0.0059	0.0019	:15-----	0.193	0.0629	:30-----	0	0
:40-----	0.228	0.0744	9:00-----	0.0014	0.0004	:20-----	0.213	0.0694			
:42-----	0.242	0.0789	10:00-----	0.0006	0.0002	:25-----	0.228	0.0742			
:45-----	0.235	0.0767	11:00-----	0.0003	0.0001	:30-----	0.228	0.0742			
:50-----	0.214	0.0698	12:00-----	0	0	:35-----	0.200	0.0652			
:53-----	0.174	0.0568				:40-----	0.168	0.0548			
:55-----	0.149	0.0486				:45-----	0.145	0.0473			
:57-----	0.200	0.0652				:50-----	0.118	0.0385			
3:00-----	0.457	0.0838				:55-----	0.0986	0.0322			
:01-----	0.333	0.109				9:00-----	0.0809	0.0264			
:03-----	0.418	0.136				:10-----	0.0538	0.0176			
:04-----	0.524	0.171				:20-----	0.0348	0.0114			
:05-----	0.594	0.194				:30-----	0.0210	0.0068			
:10-----	0.607	0.198				:40-----	0.0143	0.0047			
:13-----	0.805	0.263				:50-----	0.0089	0.0029			
:15-----	0.805	0.263				10:00-----	0.0073	0.0024			
:20-----	0.777	0.284				:15-----	0.0045	0.0015			
:25-----	0.735	0.240				:30-----	0.0016	0.0005			
:30-----	0.657	0.214				11:00-----	0.0010	0.0003			
:33-----	0.594	0.194				12:00-----	0	0			
:35-----	0.559	0.182									
:40-----	0.449	0.146									
:43-----	0.480	0.157									
:45-----	0.470	0.153									
:50-----	0.474	0.155									
:55-----	0.422	0.138									
4:00-----	0.338	0.110									
:05-----	0.242	0.0789									
:10-----	0.181	0.0590									
:12-----	0.162	0.0528									
:15-----	0.150	0.0489									
:20-----	0.113	0.0369									
:22-----	0.1082	0.0353									
:25-----	0.0940	0.0307									
:30-----	0.0851	0.0278									
:35-----	0.0851	0.0278									
:40-----	0.0610	0.0199									
:45-----	0.0505	0.0164									
:50-----	0.0439	0.0143									
5:00-----	0.0439	0.0143									
:05-----	0.0348	0.0114									
:09-----	0.0276	0.0090									
:10-----	0.0410	0.0134									
:13-----	0.0795	0.0259									
:15-----	0.0884	0.0288									
:20-----	0.138	0.0450									
:25-----	0.162	0.0528									
:30-----	0.128	0.0418									
:35-----	0.1033	0.0337									
:40-----	0.0896	0.0292									
:45-----	0.0767	0.0250									
:50-----	0.0610	0.0199									

[Area 0.256 acre, rainfall measured at recording rain gage W-9]

Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off	Date and time	Discharge	Accu- mulated run-off
STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.47 INCH			STORM OF MAY 20, 1939, TOTAL RAINFALL 1.11 INCHES		
May 17			May 17			May 18			May 20		
a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	a. m.	Sec.-ft.	In. per hr.	p. m.	Sec.-ft.	In. per hr.
0	0	0	0	0	0	0	0	0	0	0	0
6:37			7:30			6:56			1:04		
:38	.0021	.0086	:35	.0057	.0233	:57	.0282	.115	:05		
:39	.0186	.0759	:40	.0040	.0163	:58	.108	.440	:06	.0124	.0506
:40	.0480	.196	:45	.0021	.0086	:59	.161	.658	:07	.830	.339
:41	.0626	.256	:50	.0016	.0065	:01	.192	.784	:08	.176	.718
:42	.0595	.243	:55	.0008	.0033	:01	.222	.908	:09	.221	.900
:43	.0535	.218	:58	.0010	.0041	:02	.241	.985	:10	.234	.957
:44	.0412	.168	8:00	.0013	.0053	:03	.257	1.05	:11	.235	.960
:45	.0358	.146	:05	.0007	.0028	:04	.231	.943	:12	.241	.985
:46	.0275	.112	:10	.0005	.0020	:05	.218	.890	:13	.186	.760
:47	.0228	.0930	:15	.0003	.0012	:06	.212	.866	:14	.170	.695
:48	.0184	.0751	9:00	0	0	:07	.161	.658	:15	.149	.609
:49	.0160	.0653	STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.42 INCH			:08	.135	.551	:16	.130	.531
:50	.0192	.0784				:09	.101	.412	:17	.129	.528
:51	.0228	.0930				:10	.0785	.320	:18	.108	.442
:52	.0247	.101				:11	.0631	.258	:19	.0593	.242
:53	.0306	.125				:12	.0490	.200	:20	.0446	.182
:54	.0507	.207				:13	.0414	.169	:21	.0700	.286
:55	.0884	.361				:14	.0346	.141	:22	.121	.495
:56	.126	.513				:15	.0265	.108	:23	.127	.517
:57	.122	.498				:16	.0211	.0861	:24	.0751	.306
:58	.100	.408				:17	.0165	.0674	:25	.0490	.200
:59	.0736	.300				:20	.0097	.0396	:26	.0328	.134
7:00	.0670	.273				:25	.0034	.0136	:27	.0439	.179
:03	.0545	.222				:30	.0012	.0048	:28	.0414	.169
:05	.0363	.148				:35	.0007	.0028	:29	.0150	.0612
:08	.0257	.105				:40	.0015	.0020	:30	.0027	.0110
:10	.0228	.0930				:45	.0015	.0020	:31	.0017	.0069
:13	.0196	.0800				:50	.0015	.0020	:32	.0012	.0048
:15	.0150	.0612				8:00	.0003	.0012	:33	.0005	.0020
:18	.0086	.0351				9:00	.0062	.0008	:34	.0003	.0012
:20	.0056	.0228				10:00	0	0	:35	0	0
:23	.0016	.0065									
:24	.0074	.0302									
:25	.0092	.0375									
:28	.0127	.0518									

[Area 0.256 acre, rainfall measured at recording rain gage W-9]

Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off
STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH—Con.			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH—Con.			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH—Con.		
May 17 <i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	May 17 <i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	May 17 <i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>	May 17 <i>a. m.</i>	<i>Sec.-ft.</i>	<i>In. per hr.</i>
6:34-----	0	0	6:46-----	.0015	.0061	7:05-----	0.0171	.0698	7:30-----	0.0040	.0163
:35-----	.0050	.0204	:48-----	.0009	.0037	:06-----	.0122	.0498	:35-----	.0016	.0065
:36-----	.0050	.0204	:50-----	.0012	.0049	:08-----	.0066	.0269	:40-----	.0012	.0049
:37-----	.0014	.0057	:51-----	.0030	.0122	:10-----	.0044	.0180	:45-----	.0003	.0012
:38-----	.0096	.0392	:53-----	.0022	.0090	:13-----	.0022	.0090	:50-----	.0001	.0004
:39-----	.0093	.0380	:55-----	.0009	.0037	:15-----	.0016	.0065	:55-----	.0003	.0012
:40-----	.0144	.0588	7:00-----	.0016	.0065	:20-----	.0012	.0049	:57-----	.0003	.0012
:42-----	.0086	.0351	:01-----	.0036	.0147	:22-----	.0007	.0028	8:00-----	.0005	.0020
:43-----	.0068	.0278	:02-----	.0059	.0241	:23-----	.0003	.0012	:10-----	.0002	.0008
:44-----	.0032	.0130	:03-----	.0147	.0600	:24-----	.0020	.0082	:20-----	0	0
:45-----	.0028	.0114	:04-----	.0187	.0763	:25-----	.0036	.0147			

TABLE 54.—Run-off from plot 3 for selected storms, 1938-39

[Area 0.256 acre, rainfall measured at recording rain gage W-9]

Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off	Date and time	Discharge	Accumulated run-off
STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH			STORM OF MAY 17, 1939, A. M., TOTAL RAINFALL 1.00 INCH—Con.			STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.42 INCH—Con.			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.47 INCH—Con.		
May 17 a. m.	Sec.-ft.	In. per hr.	May 17 a. m.	Sec.-ft.	In. per hr.	May 17 p. m.	Sec.-ft.	In. per hr.	May 18 p. m.	Sec.-ft.	In. per hr.
6:26-----	0	0	9:00-----	0	0	10:00-----	0	0	1:00-----	0	0
:27-----	.0016	.0005	:30-----	.0001	.0004	11:00-----	.0003	.0012	2:00-----	.0003	.0012
:28-----	.0021	.0006			.2095						.2410
:30-----	.0020	.0002			.2096						.2416
:31-----	.0030	.0007	STORM OF MAY 17, 1939, P. M., TOTAL RAINFALL 0.42 INCH			STORM OF MAY 18, 1939, TOTAL RAINFALL 0.47 INCH			STORM OF MAY 20, 1939, TOTAL RAINFALL 1.11 INCHES		
:32-----	.0032	.0009	May 17			May 18			May 20		
:33-----	.0050	.0012	p. m.			a. m.			a. m.		
:34-----	.0042	.0015	7:05-----	0	0	6:53-----	0	0	12:55-----	0	0
:35-----	.0078	.0019	:10-----	.0003	.0012	:54-----	.0016	.0065	1:00-----	.0024	.0098
:36-----	.0078	.0024	:15-----	.0008	.0033	:55-----	.0018	.0073	:02-----	.0032	.0130
:38-----	.0108	.0037	:25-----	.0008	.0033	:56-----	.0038	.0155	:03-----	.0106	.0433
:40-----	.0192	.0057	:30-----	.0021	.0086	:57-----	.0196	.0800	:04-----	.0300	.122
:41-----	.0331	.0075	:35-----	.0016	.0065	:58-----	.2407	.982	:05-----	.0722	.295
:42-----	.0489	.0103	:37-----	.0009	.0037	:59-----	.3627	1.48	:06-----	.149	.609
:43-----	.0811	.0147	:38-----	.0009	.0037	7:00-----	.3820	1.56	:07-----	.244	.957
:44-----	.112	.0213	:40-----	.0022	.0090	:01-----	.3964	1.62	:08-----	.336	1.37
:45-----	.108	.0288	:42-----	.0006	.0024	:02-----	.3614	1.48	:09-----	.361	1.48
:46-----	.112	.0363	:44-----	.0034	.0139	:03-----	.2506	1.02	:10-----	.338	1.38
:47-----	.108	.0438	:45-----	.0022	.0090	:04-----	.2001	.817	:11-----	.306	1.25
:49-----	.128	.0599	:50-----	.0038	.0155	:05-----	.1356	.553	:12-----	.254	1.04
:50-----	.168	.0700	:52-----	.0068	.0278	:06-----	.1049	.428	:15-----	.186	.760
:52-----	.193	.0946	:55-----	.0068	.0278	:07-----	.0893	.364	:16-----	.168	.687
:54-----	.139	.1172	:58-----	.0101	.0412	:08-----	.0751	.306	:18-----	.185	.757
:55-----	.112	.1258	8:00-----	.0171	.0698	:09-----	.0653	.266	:20-----	.176	.717
:57-----	.0811	.1390	:02-----	.0275	.112	:10-----	.0507	.207	:25-----	.165	.674
:58-----	.0709	.1442	:03-----	.0266	.109	:11-----	.0414	.169	:30-----	.144	.588
7:00-----	.0658	.1535	:05-----	.0219	.0894	:12-----	.0346	.141	:35-----	.134	.546
:02-----	.0554	.1617	:08-----	.0256	.104	:13-----	.0265	.108	:40-----	.126	.513
:05-----	.0358	.146	:10-----	.0219	.0894	:14-----	.0246	.100	:45-----	.0820	.335
:10-----	.0219	.0894	:12-----	.0237	.0967	:15-----	.0228	.0932	:50-----	.0584	.238
:15-----	.0086	.0351	:15-----	.0328	.134	:16-----	.0211	.0861	:52-----	.0700	.286
:20-----	.0017	.0069	:20-----	.0337	.138	:18-----	.0136	.0555	:54-----	.100	.408
:21-----	.0012	.0049	:25-----	.0377	.156	:20-----	.0097	.0396	:55-----	.108	.442
:22-----	.0056	.0228	:30-----	.0462	.182	:25-----	.0056	.0228	:57-----	.131	.535
:24-----	.0114	.0465	:35-----	.0556	.210	:30-----	.0040	.0163	2:00-----	.0857	.350
:25-----	.0175	.0714	:40-----	.0674	.244	:35-----	.0034	.0136	:03-----	.0622	.254
:27-----	.0247	.101	:45-----	.0674	.244	:40-----	.0034	.0136	:05-----	.0439	.179
:30-----	.0196	.0800	:50-----	.0610	.212	:45-----	.0034	.0136	:10-----	.0390	.159
:35-----	.0136	.0555	:55-----	.0556	.210	8:00-----	.0027	.0110	:15-----	.0196	.0798
:40-----	.0048	.0196	:58-----	.0556	.210	9:00-----	.0022	.0090	:20-----	.0066	.0267
:45-----	.0022	.0090	:59-----	.0556	.210	10:00-----	.0017	.0069	:25-----	.0034	.0136
:50-----	.0003	.0012				11:00-----	.0012	.0048	:30-----	.0027	.0110
:55-----	.0005	.0020				12:00-----	.0005	.0020	3:00-----	.0017	.0069
:57-----	.0011	.0045							4:00-----	.0012	.0048
8:00-----	.0003	.0012							5:00-----	.0005	.0020
:10-----	.0005	.0020							6:00-----	0	0
:20-----	.0003	.0012									.6353
:30-----	.0003	.0012									

TABLE 55.—Rainfall at station 2 for selected storms 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:13-----		0	0	7:30-----	5	0.73	0.12	:40-----	9	0.11	0	12:30-----		0	0
:15-----	2	.01	.30	:35-----	5	.75	.24	:45-----	5	.12	.12	:32-----	2	.05	1.50
:20-----	5	.02	.12	8:10-----	35	.75	0	:50-----	5	.14	.24	:35-----	3	.08	.60
:30-----	10	.03	.06	:20-----	10	.77	.12	:55-----	5	.17	.36	:38-----	3	.14	1.20
:40-----	10	.04	.06	:30-----	10	.79	.12	8:00-----	5	.18	.12	:40-----	2	.18	1.20
:50-----	10	.05	.06	:40-----	10	.81	.12	:10-----	10	.18	0	:44-----	4	.35	2.55
				:50-----	10	.82	.06	:13-----	3	.19	.20	:45-----	1	.39	2.40
May 17				STORM OF MAY 17-18, 1939				:15-----	2	.23	-1.20	:50-----	5	.45	.72
a. m.				May 17				:20-----	5	.26	.36	:54-----	4	.49	.60
6:14-----	624	.05	0	p. m.				:25-----	5	.29	.36	:55-----	1	.52	1.80
:15-----	1	.06	.60	7:10-----	5	.05	.60	8:20-----	575	.29	0	1:00-----	5	.69	2.04
:20-----	5	.21	1.80	:15-----	5	.07	.24	:22-----	2	.31	.60	:01-----	1	.71	1.20
:25-----	5	.35	1.68	:20-----	5	.08	.12	:23-----	1	.34	1.80	:05-----	4	.74	.45
:27-----	2	.42	2.10	:25-----	5	.09	.20	:25-----	2	.35	.30	:10-----	5	.75	.12
:30-----	3	.44	.40	:30-----	2	.10	.30	:27-----	2	.36	.30	:24-----	14	.75	0
:40-----	10	.54	.60	:31-----	1	.11	.60	:30-----	3	.37	.20	:25-----	1	.77	1.20
:50-----	10	.59	.30					6:20-----	575	.29	0	:30-----	5	.81	.48
7:00-----	10	.67	.48					:22-----	2	.31	.60	:34-----	4	.83	.30
:22-----	22	.67	0					:23-----	1	.34	1.80	:35-----	1	.83	0
:23-----	1	.69	1.20					:25-----	2	.35	.30	:40-----	5	.84	.12
:25-----	2	.72	.90					:27-----	2	.36	.30	:45-----	5	.86	.24
								:30-----	3	.37	.20	:50-----	5	.86	0
												2:00-----	10	.88	.12

TABLE 56.—*Rainfall at station 5 for selected storms, 1937-39*

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 22, 1937				STORM OF JAN. 23, 1938—Continued				STORM OF FEB. 16, 1938—Continued				STORM OF APR. 14-15, 1938—Con.			
Dec. 22				Jan. 23				Feb. 16				Apr. 14			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
2:10		0	0	4:00	15	1.16	0.36	2:25	5	0.97	1.32	11:41	1	0.04	0.60
:20	10	.02	.12	:15	15	1.22	.24	:30	5	.99	.24	:43	2	.13	2.70
:30	10	.04	.12	:30	15	1.28	.24	:45	15	1.05	.24	:45	2	.14	.30
:45	15	.05	.04	:45	15	1.34	.24	3:00	15	1.08	.12	:50	5	.18	.48
3:00	15	.06	.04	5:00	15	1.42	.32	:15	15	1.13	.20	:53	3	.19	.20
:15	15	.08	.08	:15	15	1.47	.20	:30	15	1.20	.28	:55	2	.22	.90
:30	15	.12	.16	:30	15	1.52	.20	:45	15	1.24	.16	12:00	5	.24	.24
:45	15	.14	.08	:45	15	1.57	.20	4:00	15	1.29	.20				
4:00	15	.19	.20	6:00	15	1.60	.12	:15	15	1.32	.12				
:15	15	.25	.24	:15	15	1.66	.24					Apr. 15			
:30	15	.26	.04	:30	15	1.72	.24					a. m.			
:45	15	.29	.12	:45	15	1.76	.16					12:05	5	.30	.72
5:00	15	.30	.04	7:00	15	1.84	.32					:10	5	.49	2.28
:30	30	.31	.02	:15	15	1.85	.04					:14	4	.68	2.85
6:00	30	.33	.04	:30	15	1.86	.04					:15	1	.69	.60
:15	15	.36	.12	:45	15	1.89	.12					:20	5	.72	.36
:30	15	.37	.04	8:00	15	1.91	.08					:21	1	.73	.60
:45	15	.39	.08	:15	15	1.96	.20					:25	4	.82	1.35
7:00	15	.40	.04	:30	15	2.03	.28					:30	5	.84	.24
:15	15	.42	.08	:45	15	2.10	.28					1:00	30	.84	0
:30	15	.43	.04	9:00	15	2.24	.56					:05	5	.85	.12
:45	15	.44	.04	:15	15	2.26	.08					:10	5	.91	.72
8:00	15	.45	.04	:30	15	2.27	.04					:15	5	.95	.48
:30	30	.45	0	:45	15	2.29	.08					:30	15	.99	.16
:45	15	.47	.08	10:00	15	2.30	.04					:45	15	1.03	.16
9:00	15	.48	.08	:15	15	2.32	.08					2:00	15	1.07	.16
:15	15	.50	.04	11:30	75	2.32	0					3:03	63	1.07	0
:30	15	.55	.20	:45	15	2.35	.12					:05	2	1.13	1.80
:45	15	.60	.20	12:00	15	2.37	.08					:10	5	1.16	.36
10:00	15	.63	.12									:20	10	1.16	0
:15	15	.64	.04	p. m.								:25	5	1.18	.24
:30	15	.71	.28	12:15	15	2.37	0					:30	5	1.22	.48
:45	15	.72	.04	:30	15	2.38	.04					:35	5	1.30	.96
11:00	15	.75	.12	:45	15	2.39	.04					:40	5	1.36	.72
:15	15	.77	.08	1:00	15	2.40	.04					:45	5	1.39	.36
:30	15	.79	.08	:15	15	2.41	.04					:50	5	1.40	.12
:45	15	.82	.12	3:25	130	2.41	0					6:00	130	1.40	0
12:00	15	.90	.32	:30	5	2.45	.48					:10	10	1.42	.12
				:35	5	2.48	.36					7:40	90	1.42	0
p. m.				:40	5	2.49	.12					:50	10	1.44	.12
12:15	15	.96	.24	4:15	35	2.49	0					8:40	50	1.44	0
:30	15	1.01	.20	:30	15	2.52	.12					:45	5	1.46	.24
:45	15	1.05	.16	:45	15	2.55	.12					9:07	22	1.46	0
1:00	15	1.08	.12	5:00	15	2.57	.08					:10	3	1.50	.80
:15	15	1.11	.12	6:00	60	2.57	0					:15	5	1.52	.24
:30	15	1.14	.12	7:00	60	2.59	.02					:20	5	1.54	.24
:45	15	1.17	.12	8:00	60	2.61	.02					:25	5	1.55	.12
2:15	30	1.17	0									:30	5	1.56	.12
:30	15	1.19	.08									:35	5	1.58	.24
5:00	150	1.19	0									:40	5	1.71	1.50
:15	15	1.20	.04									:45	5	1.84	1.50
:30	15	1.23	.12									:50	5	1.86	.24
:45	15	1.25	.08									:55	5	1.96	1.20
6:00	15	1.26	.04									10:00	5	2.05	1.08
STORM OF JAN. 23, 1938				STORM OF FEB. 16, 1938				STORM OF MAR. 27, 1938				STORM OF MAR. 28, 1938			
Jan. 23				Feb. 16				Mar. 27				Mar. 28			
a. m.				a. m.				a. m.				p. m.			
12:35		0	0	10:23		0	0	12:04		0	0	12:18		0	0
:40	5	.01	.12	:25	2	.01	.30	:05	1	.01	.60	:20	2	.04	1.20
:50	10	.02	.06	:28	3	.01	T	:10	5	.03	.24	:30	5	.04	0
1:00	10	.02	T	:30	2	.04	.90	:15	5	.04	.12	:45	5	.05	.12
:03	3	.03	.20	:35	5	.10	.72	:30	15	.07	.12	:50	5	.74	8.28
:04	1	.06	1.80	:40	5	.11	.12	:45	15	.17	.40	:52	2	.82	2.40
:05	1	.07	.60	:48	8	.11	0	:55	15	.20	.12	:58	3	.83	.20
:10	5	.08	.12	:50	2	.12	.30	:59	15	.21	.04	:59	3	.85	.40
:15	5	.09	.12	:55	5	.15	.36	4:00	2	.86	.30	:05	5	.87	.12
:18	3	.19	2.00	11:02	7	.15	0	:10	5	.87	0	:15	5	.90	.36
:20	2	.20	.30	:05	3	.16	.20	:20	5	1.05	1.80	:20	5	1.09	1.20
:25	5	.30	1.20					:22	2	1.09	1.20	:25	5	1.11	.24
:30	5	.34	.48					:45	23	1.09	0	:30	5	1.11	.24
:35	5	.38	.48					6:30	100	1.11	T	:35	5	1.11	.24
:40	5	.39	.12					:40	10	1.12	.06	:40	5	1.12	.06
:45	5	.40	.12					:45	5	1.13	.12	:45	5	1.13	.12
:50	5	.41	.12												
:55	5	.43	.24												
2:00	5	.45	.24												
:05	5	.47	.24												
:10	5	.56	1.08												
:15	5	.63	.84												
:20	5	.68	.60												
:25	5	.72	.48												
:30	5	.74	.24												
:45	15	.79	.20												
3:00	15	.90	.44												
:15	15	.98	.32												
:30	15	1.02	.16												
:45	15	1.07	.20												
STORM OF JAN. 23, 1938				STORM OF FEB. 16, 1938				STORM OF MAR. 27, 1938				STORM OF MAR. 28, 1938			
Jan. 23				Feb. 16				Mar. 27				Mar. 28			
a. m.				a. m.				a. m.				p. m.			
12:35		0	0	10:23		0	0	12:04		0	0	12:18		0	0
:40	5	.01	.12	:25	2	.01	.30	:05	1	.01	.60	:20	2	.04	1.20
:50	10	.02	.06	:28	3	.01	T	:10	5	.03	.24	:30	5	.04	0
1:00	10	.02	T	:30	2	.04	.90	:15	5	.04	.12	:45	5	.05	.12
:03	3	.03	.20	:35	5	.10	.72	:30	15	.07	.12	:50	5	.74	8.28
:04	1	.06	1.80	:40	5	.11	.12	:45	15	.17	.40	:52	2	.82	2.40
:05	1	.07	.60	:48	8	.11	0	:55	15	.20	.12	:58	3	.83	.20
:10	5	.08	.12	:50	2	.12	.30	:59	15	.21	.04	:59	3	.85	.40
:15	5	.09	.12	:55	5	.15	.36	4:00	2	.86	.30	:05	5	.87	.12
:18	3	.19	2.00	11:02	7	.15	0	:10	5	.87	0	:15	5	.90	.36
:20	2	.20	.30	:05	3	.16	.20	:20	5	1.05	1.80	:20	5	1.09	1.20
:25	5	.30	1.20					:22	2	1.09	1.20	:25	5	1.11	.24
:30	5	.34	.48					:45	23	1.09	0	:30	5	1.11	.24
:35	5	.38	.48					6:30	100	1.11	T	:35	5	1.11	.24
:40	5	.39	.12					:40	10	1.12	.06	:40	5	1.12	.06
:45	5	.40	.12					:45	5	1.13	.12	:45	5	1.13	.12
:50	5	.41	.12												
:55	5	.43	.24												
2:00	5	.45	.24												
:05	5	.47	.24												
:10	5	.56	1.08												
:15	5	.63	.84												
:20	5	.68	.60												
:25	5	.72	.48												
:30	5	.74	.24												
:45	15	.79	.20												
3:00	15	.90	.44												
:15	15	.98	.32				</								

TABLE 56.—Rainfall at station 5 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
5:40-----	10	0.05	.06	7:24-----	19	0.66	0	7:05-----	1	0.02	1.20	12:33-----		0	0
:50-----	10	.06	.06	:25-----	1	.68	1.20	:10-----	5	.05	.36	:35-----	2	.05	1.50
May 17				:30-----	5	.69	.12	:20-----	10	.09	.24	:40-----	5	.10	.60
a. m.				:35-----	5	.70	.12	:30-----	10	.12	.18	:44-----	4	.19	1.35
6:15-----	625	.06	0	:40-----	5	.71	.12	:40-----	10	.14	.12	:45-----	1	.26	4.20
:18-----	3	.08	.40	8:15-----	35	.71	0	:50-----	10	.18	.24	:47-----	2	.33	2.10
:20-----	2	.15	2.10	:20-----	5	.73	.24	8:00-----	10	.19	.06	:50-----	3	.37	.80
:24-----	4	.21	.90	:25-----	5	.74	.12	:05-----	5	.20	.12	:55-----	5	.43	.72
:25-----	1	.29	4.80	:30-----	5	.76	.24	:09-----	4	.21	.15	1:00-----	5	.45	.24
:28-----	3	.39	2.00	:35-----	5	.77	.12	:10-----	1	.25	2.40	:02-----	2	.63	5.40
:30-----	2	.41	.60	:40-----	5	.78	.12	:15-----	5	.28	.36	:05-----	3	.69	1.20
:35-----	5	.48	.84	STORM OF MAY 17-18, 1939				:20-----	5	.29	.12	:10-----	5	.72	.36
:40-----	5	.52	.48	May 17				May 18				:20-----	10	.72	0
:45-----	5	.56	.48	p. m.				a. m.				:30-----	10	.74	.12
:50-----	5	.59	.36	7:04-----		0	0	6:12-----	592	.29	0	:35-----	5	.78	.48
:55-----	5	.63	.48					:15-----	3	.32	.60	:40-----	5	.82	.48
7:00-----	5	.65	.24					:20-----	5	.35	.36	:45-----	5	.84	.24
:05-----	5	.66	.12					:25-----	5	.36	.12	:50-----	5	.85	.12
												:55-----	5	.86	.12

TABLE 57.—Rainfall at station 14 for selected storms, 1937-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 21-22, 1937				STORM OF DEC. 21-22, 1937—Con.				STORM OF JAN. 23, 1938—Con.				STORM OF JAN. 23, 1938—Con.			
Dec. 21				Dec. 22				Jan. 23				Jan. 23			
p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
7:10-----		0	0	12:15-----	15	0.94	.20	3:00-----	5	0.98	.48	4:30-----	15	2.66	0.04
:15-----	5	.01	.12	:30-----	15	.98	.16	:15-----	15	1.05	.28	:45-----	15	2.69	.12
:30-----	15	.01	0	:45-----	15	1.02	.16	:30-----	15	1.10	.20	5:00-----	15	2.71	.08
:45-----	15	.03	.08	1:00-----	15	1.05	.12	:45-----	15	1.15	.20	7:00-----	120	2.71	0
8:00-----	15	.05	.08	:15-----	15	1.09	.16	4:00-----	15	1.24	.36	:30-----	30	2.73	.04
Dec. 22				:30-----	15	1.12	.12	:15-----	15	1.34	.40	STORM OF FEB. 16, 1938			
a. m.				:45-----	15	1.15	.12	:30-----	15	1.39	.20	Feb. 16			
2:15-----	275	.05	0	2:00-----	15	1.17	.08	:45-----	15	1.45	.24	a. m.			
:30-----	15	.08	.12	:30-----	30	1.17	0	5:00-----	15	1.53	.32	10:35-----		0	0
:45-----	15	.09	.04	:40-----	10	1.19	.12	:15-----	15	1.58	.20	:40-----	5	.04	.48
3:00-----	15	.10	.04	4:45-----	125	1.19	0	:30-----	15	1.63	.20	:45-----	5	.06	.24
:15-----	15	.12	.08	5:00-----	15	1.21	.08	:45-----	15	1.67	.16	:50-----	5	.07	.12
:30-----	15	.14	.08	:15-----	15	1.25	.16	6:00-----	15	1.71	.16	:55-----	5	.08	.12
:45-----	15	.17	.12	:30-----	15	1.26	.04	:15-----	15	1.76	.20	11:00-----	5	.13	.60
4:00-----	15	.23	.24	:45-----	15	1.27	.04	:30-----	15	1.84	.32	:05-----	5	.16	.36
:15-----	15	.28	.20	6:00-----	15	1.28	.04	:45-----	15	1.86	.08	:10-----	5	.18	.24
:30-----	15	.29	.04	:15-----	15	1.29	.04	7:00-----	15	1.92	.24	:15-----	5	.19	.12
:45-----	15	.31	.08	STORM OF JAN. 23, 1938				:15-----	15	1.93	.04	STORM OF FEB. 16, 1938			
5:30-----	45	.31	0	Jan. 23				:30-----	15	1.96	.12	p. m.			
:45-----	15	.32	.04	a. m.				:45-----	15	1.97	.04	12:15-----	60	.19	0
6:00-----	15	.34	.08	12:30-----		0	0	:15-----	15	2.05	.24	:20-----	5	.21	.24
:15-----	15	.37	.12	:45-----	15	.01	.04	:30-----	15	2.12	.28	:25-----	5	.22	.12
:30-----	15	.38	.04	1:00-----	15	.02	.04	:35-----	5	2.13	.12	:30-----	5	.24	.24
:45-----	15	.40	.08	:04-----	4	.03	.15	:40-----	5	2.15	.24	:35-----	5	.25	.12
7:00-----	15	.41	.04	:05-----	1	.06	1.80	:45-----	5	2.25	1.20	:40-----	5	.26	.12
:15-----	15	.42	.04	:10-----	5	.07	.12	5:00-----	5	2.30	.60	1:20-----	40	.26	0
:30-----	15	.44	.08	:12-----	2	.07	T	:55-----	5	2.32	.24	:25-----	5	.27	.12
:45-----	15	.45	.04	:15-----	3	.15	1.60	9:00-----	5	2.34	.24	:30-----	5	.28	.12
8:30-----	45	.45	0	:20-----	5	.23	.96	:15-----	15	2.36	.08	:35-----	5	.29	.12
:45-----	15	.48	.12	:25-----	5	.35	1.44	:30-----	15	2.38	.08	:40-----	5	.32	1.80
9:00-----	15	.50	.08	:30-----	5	.42	.84	:45-----	15	2.41	.12	:45-----	5	.33	.30
:15-----	15	.52	.08	:45-----	15	.47	.20	10:00-----	15	2.43	.08	:50-----	5	.34	.12
:30-----	15	.56	.16	2:00-----	15	.54	.28	11:30-----	90	2.46	0	:55-----	5	.35	.30
:45-----	15	.59	.12	:05-----	5	.59	.60	:15-----	15	2.49	.12	1:00-----	10	.45	0
10:00-----	15	.63	.16	:10-----	5	.62	.36	p. m.				:05-----	5	.45	.24
:15-----	15	.63	0	:15-----	5	.68	.72	1:00-----	60	2.51	.02	:10-----	2	.57	.30
:20-----	5	.68	.60	:20-----	5	.75	.84	2:00-----	60	2.52	.01	:15-----	5	.58	.12
:25-----	5	.72	.48	:25-----	5	.77	.24	3:15-----	75	2.52	0	:20-----	5	.59	.12
:30-----	5	.74	.24	:30-----	5	.83	.72	:20-----	5	2.53	.12	:25-----	5	.62	.36
:45-----	15	.75	.04	:35-----	5	.85	.24	:25-----	5	2.55	.24	:30-----	5	.68	.72
11:00-----	15	.76	.04	:40-----	5	.86	.12	:30-----	5	2.58	.36				
:15-----	15	.78	.08	:45-----	5	.89	.36	:35-----	5	2.61	.36				
:30-----	15	.80	.08	:50-----	5	.90	.12	:40-----	5	2.62	.12				
:45-----	15	.81	.04	:55-----	5	.94	.48	:45-----	5	2.63	.12				
:50-----	5	.82	.12					4:00-----	15	2.64	.04				
:55-----	5	.84	.24					:15-----	15	2.65	.04				
12:00-----	5	.89	.60												

TABLE 57.—*Rainfall at station 14 for selected storms, 1937-39—Continued*

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF FEB. 16, 1938—Con.				STORM OF MARCH 28, 1938—Con.				STORM OF 14-15, 1938—Con.				STORM OF MAY 16-17, 1939—Con.			
Feb. 16				Mar. 28				Apr. 15				May 17			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
2:35	5	0.72	0.48	4:30	5	1.02	0.12	10:00	5	1.99	1.08	8:25	45	0.73	0
:40	5	.74	.24	6:25	115	1.02	0	:01	1	2.00	.60	:30	5	.76	.36
:45	5	.76	.24	:30	5	1.04	.24	:03	2	2.09	2.70	:40	10	.78	.12
3:00	15	.79	.12	:40	10	1.04	0	:05	2	2.11	.60	:50	10	.79	.06
:15	15	.82	.12	:45	5	1.07	.36	:10	5	2.12	.12	9:40	50	.79	0
:30	15	.88	.24	:50	5	1.09	.24	:15	5	2.13	.12	:45	5	.80	.12
:45	15	.94	.24	STORM OF APR. 14-15, 1938				:20	5	2.14	.12	STORM OF MAY 17-18, 1939			
4:00	15	.98	.16	Apr. 14				:25	5	2.15	.12	May 17			
:15	15	1.02	.16	<i>p. m.</i>				:30	5	2.18	.36	<i>p. m.</i>			
STORM OF MAR. 27, 1938				Apr. 15				:45	15	2.19	.04	6:38			
Mar. 27				<i>a. m.</i>				:45	15	2.20	.04	:40			
<i>a. m.</i>				12:04				:15	15	2.23	.12	:50			
12:04		0	0	11:36				:20	5	2.23	0	7:00			
:05	1	.01	.60	:40				:25	5	2.25	.24	:10			
:10	5	.07	.72	:41				:30	5	2.37	1.44	:15			
:15	5	.09	.24	:43				:35	5	2.41	.48	:20			
:20	5	.10	.12	:45				:45	10	2.42	.06	:25			
:25	5	.12	.24	:50				:55	10	2.43	.06	:30			
:30	5	.13	.12	12:00				<i>p. m.</i>				:35			
:35	5	.16	.36	Apr. 15				12:30	35	2.43	0	:40			
:40	5	.21	.60	<i>a. m.</i>				1:00	30	2.44	.02	:45			
:45	5	.25	.48	12:04				:30	30	2.45	.02	:50			
:50	5	.29	.48	:05				:40	10	2.52	.06	:55			
1:00	10	.29	0	:10				:50	10	2.53	.06	8:00			
:30	30	.32	.06	:13				:52	2	2.53	T	:10			
3:25	115	.32	0	:15				:55	3	2.54	.20	:20			
:35	10	.35	.18	:20				3:00	5	2.58	.48	:25			
:40	125	.35	0	:24				:18	18	2.58	0	May 18			
:50	10	.37	.12	:25				:20	2	2.60	.60	<i>a. m.</i>			
6:00	10	.38	.06	:30				:25	5	2.61	.12	6:25			
:45	45	.38	0	:45				:30	5	2.66	.60	:30			
:15	15	.42	.16	1:00				:50	20	2.66	0	:40			
:30	15	.48	.24	:05				:55	5	2.67	.12	:50			
:45	15	.53	.20	:10				STORM OF MAY 16-17, 1939				:55			
:50	15	.57	.16	:15				May 16				6:25			
8:00	15	.59	.08	:20				<i>p. m.</i>				:30			
:15	15	.60	.04	:25				7:14		0	0	:35			
:30	15	.65	.20	:30				:15	1	.01	.60	:40			
:35	5	.70	.60	:45				:20	5	.04	.36	:45			
:40	5	.77	.84	:50				:25	5	.06	.24	:50			
:45	5	1.02	3.00	:55				:35	10	.06	0	:55			
:50	5	1.15	1.56	:59				:40	5	.08	.24	6:00			
:55	5	1.23	.96	2:00				May 17				:65			
9:00	5	1.33	1.20	3:04				<i>a. m.</i>				:70			
:15	15	1.36	.12	:05				6:19	639	.08	0	:75			
:30	15	1.37	.04	:10				:20	1	.09	.60	:80			
STORM OF MARCH 28, 1938				:15				:22	2	.11	.60	:85			
Mar. 28				:20				:25	3	.19	1.60	:90			
<i>p. m.</i>				:25				:30	5	.31	1.44	:95			
12:25	5	.02	.24	:30				:35	5	.39	.96	1:00			
3:35	190	.02	0	:35				:40	5	.50	1.32	:05			
:40	5	.03	.12	:40				:44	4	.58	1.20	:10			
:45	5	.04	.12	:45				:45	1	.59	.60	:15			
:48	3	.05	.20	:50				:50	5	.60	.12	:20			
:50	2	.24	5.70	:55				:52	2	.61	.30	:25			
:55	5	.74	6.00	6:00				:55	3	.65	.80	:30			
4:00	5	.77	.36	7:00				:58	5	.68	.36	:35			
:05	5	.78	.12	8:40				:59	1	.69	.60	:40			
:10	5	.78	T	:45				:59	5	.70	.12	:45			
:15	5	.79	.12	:50				:59	5	.71	.12	:50			
:20	5	.85	.72	:55				:59	5	.72	.12	:55			
:25	5	1.01	1.92	6:00				:59	5	.73	.12	6:00			
				7:00				:59	5	.74	.12	:05			
				8:40				:59	5	.75	.12	:10			
				:45				:59	5	.76	.12	:15			
				:50				:59	5	.77	.12	:20			
				:55				:59	5	.78	.12	:25			
				6:00				:59	5	.79	.12	:30			
				7:00				:59	5	.80	.12	:35			
				8:40				:59	5	.81	.12	:40			
				:45				:59	5	.82	.12	:45			
				:50				:59	5	.83	.12	:50			
				:55				:59	5	.84	.12	:55			
				6:00				:59	5	.85	.12	6:00			
				7:00				:59	5	.86	.12	:05			
				8:40				:59	5	.87	.12	:10			
				:45				:59	5	.88	.12	:15			
				:50				:59	5	.89	.12	:20			
				:55				:59	5	.90	.12	:25			
				6:00				:59	5	.91	.12	:30			
				7:00				:59	5	.92	.12	:35			
				8:40				:59	5	.93	.12	:40			
				:45				:59	5	.94	.12	:45			
				:50				:59	5	.95	.12	:50			
				:55				:59	5	.96	.12	:55			
				6:00				:59	5	.97	.12	6:00			
				7:00				:59	5	.98	.12	:05			
				8:40				:59	5	.99	.12	:10			
				:45				:59	5	1.00	.12	:15			
				:50				:59	5	1.01	.12	:20			
				:55				:59	5	1.02	.12	:25			
				6:00				:59	5	1.03	.12	:30			
				7:00				:59	5	1.04	.12	:35			
				8:40				:59	5	1.05	.12	:40			
				:45				:59	5	1.06	.12	:45			
				:50				:59	5	1.07	.12	:50			
				:55				:59	5	1.08	.12	:55			
				6:00				:59	5	1.09	.12	6:00			
				7:00				:59	5	1.10	.12	:05			
				8:40				:59	5	1.11	.12	:10			
				:45				:59	5	1.12	.12	:15			
				:50				:59	5	1.13	.12	:20			
				:55				:59	5	1.14	.12	:25			
				6:00				:59	5	1.15	.12	:30			
				7:00				:59	5	1.16	.12	:35			
				8:40				:59	5	1.17	.12	:40			
				:45				:59	5	1.18	.12	:45			
				:50				:59	5	1.19	.12	:50			
				:55				:59	5	1.20	.12	:55			
				6:00				:59	5	1.21	.12	6:00			
				7:00				:59	5	1.22	.12	:05			
				8:40				:59	5	1.23	.12	:10			
				:45				:59	5	1.24	.12	:15			
				:50				:59	5	1.25	.12	:20			
				:55				:59	5	1.26	.12	:25			
				6:00				:59	5	1.27	.12	:30			
				7:00				:59	5	1.28	.12	:35			
				8:40				:59	5	1.29	.12	:40			
				:45				:59	5	1.30	.12	:45			
				:50				:59	5	1.31	.12	:50			
				:55				:59	5	1.32	.12	:55			
				6:00				:59	5	1.33	.12	6:00			
				7:00				:59	5	1.34	.12	:05			
				8:40				:59	5	1.35	.12	:10			
				:45				:59	5	1.36	.12	:15			
				:50				:59	5	1.37	.12	:20			
				:55				:59	5	1.38	.12	:25			
				6:00				:59	5	1.39	.12	:30			
				7:00				:59	5	1.40	.12	:35			
				8:40				:59	5	1.41	.12	:40			
				:45				:59	5	1.42	.12	:45			
				:50				:59	5	1.43	.12	:50			
				:55				:59	5	1.44	.12	:55			
				6:00				:59	5	1.45	.12	6:00			
				7:00				:59	5	1.46	.12	:05			
				8:40				:59	5	1.47	.12	:10			
				:45				:59	5	1.48	.12	:15			
				:50				:59	5	1.49	.12	:20			
				:55				:59	5	1.50	.12	:25			
				6:00				:59	5	1.51	.12	:30			
				7:00				:59	5	1.52	.12	:35			
				8:40				:59	5	1.53	.12	:40			
				:45				:59	5	1.54	.12	:45			
				:50				:59	5	1.55	.12	:50			
				:55				:59	5	1.56	.12	:55			
				6:00				:59	5	1.57	.12	6:00			
				7:00				:59	5	1.58	.12	:05			
				8:40				:59	5	1.59	.12	:10			
				:45				:59	5	1.60	.12	:15			
				:50				:59	5	1.61	.12	:20			
				:55				:59	5	1.62	.12	:25			
				6:00				:59	5	1.63	.12	:30			
				7:00				:59	5	1.64	.12	:35			
				8:40				:59	5	1.65	.12	:40			
				:45				:59	5	1.66	.12	:45			
				:50				:59	5	1.67	.12	:50			
				:55				:59	5	1.68	.12	:55			
				6:00				:59	5	1.69	.12	6:00			
				7:00				:59	5	1.70	.12	:05			
				8:40				:59	5	1.71	.12	:10			
				:45				:59	5	1.72	.12	:15			
				:50				:59	5	1.73	.12	:20			
				:55				:59	5	1.74	.12	:25			
				6:00				:59	5	1.75	.12	:30			
				7:00				:59	5	1.76	.12	:35			
				8:40				:59	5	1.77	.12	:40			
				:45				:59	5	1.78	.12	:45			
				:50				:59	5	1.79	.12	:50			
				:55				:59	5	1.80	.12				

TABLE 58—*Rainfall at station 27 for selected storms, 1937-39*

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	
STORM OF DEC. 21-22, 1937				STORM OF JAN. 23, 1938—Con.				STORM OF FEB. 16, 1938—Con.				STORM OF MAR. 28, 1938—Con.				
Dec. 21				Jan. 23				Feb. 16				Mar. 28				
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	
7:30		0	0	2:57	2	0.83	0	1:46	1	0.25	2.40	3:43	1	0.21	7.20	
8:30	60	.01	.01	3:00	3	.90	1.40	:50	4	.26	.15	:44	1	.45	14.40	
9:30	60	.02	.01	:01	1	.93	1.80	:55	5	.34	.96	:45	1	.58	7.80	
10:30	60	.03	.01	:05	4	.94	.15	:59	4	.38	.60	:46	1	.66	4.80	
Dec. 22								2:00								
<i>a. m.</i>				:15	10	.99	.30	:02	2	.46	1.20	:48	2	.73	2.10	
2:15		0	0	:30	15	1.04	.20	:11	9	.46	0	:50	2	.74	.30	
:30		.04	.04	:45	15	1.11	.28	:15	4	.54	1.20	:55	5	.77	.36	
:45	15	.06	.08	4:00	15	1.20	.36	:18	3	.54	0	4:00	5	.78	.12	
3:00	15	.07	.04	:15	15	1.27	.28	:20	2	.55	.30	:08	8	.78	0	
:15	15	.11	.16	:30	15	1.33	.24	:25	5	.57	.24	:10	2	.79	.30	
:30	15	.13	.08	:45	15	1.40	.28	:30	5	.58	.12	:12	2	.84	1.50	
:45	15	.15	.08	5:00	15	1.46	.24	:35	5	.68	1.20	:14	2	.86	.60	
4:00	15	.19	.16	:15	15	1.52	.24	:38	3	.79	2.20	:15	1	.93	4.20	
:15	15	.25	.24	:30	15	1.57	.20	:40	2	.81	.60	:16	1	1.02	5.40	
:30	15	.30	.20	:45	15	1.62	.20	:45	5	.82	.12	:18	2	1.04	.60	
:45	15	.32	.08	:50	5	1.62	0	:50	5	.83	.12	:20	2	1.05	.30	
5:40	55	.32	0	6:00	10	1.65	.08	:55	5	.86	.36	6:35	135	1.05	0	
:45	5	.33	.12	:15	15	1.71	.24	3:00	5	.87	.12	:38	3	1.07	.40	
6:00	15	.34	.04	:30	15	1.78	.28	:05	5	.88	.12	:40	2	1.08	.30	
:15	15	.36	.08	:35	5	1.80	.24	:10	5	.89	.12					
:30	15	.38	.08	:40	5	1.81	.12	:15	5	.90	.12					
:45	15	.40	.08	:45	5	1.82	.12	:20	5	.91	.12					
7:00	15	.41	.04	:50	5	1.85	.36	:25	5	.92	.12					
:15	15	.42	.04	7:00	10	1.89	.24	:30	5	.94	.24					
:30	15	.44	.08	:25	25	1.90	.02	:40	10	.99	.30					
:45	15	.46	.08	:30	5	1.92	.24	:50	10	1.04	.30					
8:40	55	.46	0	:35	5	1.94	.24	4:00	10	1.06	.12					
:45	5	.48	.24	:45	10	1.95	.06	:05	5	1.07	.12					
9:00	15	.50	.08	8:00	15	1.98	.12	:10	5	1.09	.24					
:15	15	.53	.12	:15	15	2.03	.20	:15	5	1.11	.24					
:30	15	.57	.16	:30	15	2.10	.28	:20	5	1.12	.12					
:45	15	.62	.20	:40	10	2.12	.12	STORM OF MAR. 27, 1938								
10:00	15	.65	.12	:45	5	2.16	.08	Mar. 27								
:15	15	.67	.08	:50	5	2.22	.72	<i>a. m.</i>								
:20	5	.68	.12	:55	5	2.26	.48	12:01		0	0					
:25	5	.70	.24	9:00	5	2.29	.36	:05	4	.03	.45					
:30	5	.75	.60	:15	15	2.31	.08	:08	3	.12	1.80					
:40	10	.78	.18	:30	15	2.33	.08	:10	2	.15	.90					
:50	10	.79	.06	:35	5	2.35	.36	:15	5	.19	.48					
11:15	25	.79	0	10:00	25	2.35	0	:20	5	.20	.12					
:30	15	.81	.08	:03	3	2.38	.60	:27	7	.20	0					
:45	15	.83	.08	11:33	90	2.38	0	:30	3	.23	.60					
12:00	15	.83	0	:45	12	2.41	.15	:35	5	.24	.12					
				12:00	10	2.42	.12	:40	5	.25	.12					
						2.44	.12	:45	5	.28	.36					
				<i>p. m.</i>				:50	5	.32	.48					
				12:15	35	2.44	0	1:20	30	.32	0					
				:30	5	2.45	.12	:50	30	.34	.04					
				:45	20	2.46	.03	4:40	170	.34	0					
				1:00	143	2.46	0	:45	55	.36	0					
				:15	2	2.51	1.50	:50	10	.37	.06					
				:30	5	2.55	.48	6:00	10	.38	.06					
				:45	5	2.57	.24	:40	40	.38	0					
				2:00	30	2.59	.24	:50	10	.39	.06					
				:30	10	2.60	.06	7:00	10	.42	.18					
				:45	30	2.63	.04	:10	10	.44	.12					
				5:00	15	2.66	.12	:20	10	.49	.30					
				6:00	60	2.68	.08	:30	10	.52	.18					
						2.69	.01	:40	10	.55	.18					
				STORM OF FEB. 16, 1938												
				Feb. 16												
				<i>a. m.</i>				<i>a. m.</i>				<i>a. m.</i>				
				10:42		0	0	10:42		0	0	10:42		0	0	
				:45	3	.03	.60	:45	3	.06	.36	:45	3	.06	.36	
				:50	5	.06	.36	:50	5	.07	.30	:50	5	.07	.30	
				:52	2	.07	.30	:52	2	.07	.30	:52	2	.07	.30	
				11:02	10	.07	0	11:02	10	.07	0	11:02	10	.07	0	
				:04	2	.10	.90	:04	2	.10	.90	:04	2	.10	.90	
				:07	3	.10	0	:07	3	.10	0	:07	3	.10	0	
				:10	3	.12	.40	:10	3	.12	.40	:10	3	.12	.40	
				:20	10	.13	.06	:20	10	.13	.06	:20	10	.13	.06	
				<i>p. m.</i>				<i>p. m.</i>				<i>p. m.</i>				
				12:20	60	.13	0	12:20	60	.13	0	12:20	60	.13	0	
				:21	1	.14	.60	:21	1	.14	.60	:21	1	.14	.60	
				:29	8	.14	0	:29	8	.14	0	:29	8	.14	0	
				:30	1	.16	1.20	:30	1	.16	1.20	:30	1	.16	1.20	
				:35	5	.16	0	:35	5	.16	0	:35	5	.16	0	
				:40	5	.18	.24	:40	5	.18	.24	:40	5	.18	.24	
				:45	5	.19	.12	:45	5	.19	.12	:45	5	.19	.12	
				:50	5	.19	0	:50	5	.19	0	:50	5	.19	0	
				:51	1	.20	.60	:51	1	.20	.60	:51	1	.20	.60	
				1:40	49	.20	0	1:40	49	.20	0	1:40	49	.20	0	
				:42	2	.21	.30	:42	2	.21	.30	:42	2	.21	.30	
				:45	3	.21	0	:45	3	.21	0	:45	3	.21	0	
				STORM OF MAR. 28, 1938												
				Mar. 28												
				<i>p. m.</i>				<i>p. m.</i>				<i>p. m.</i>				
				3:40		0	0	3:40		0	0	3:40		0	0	
				:42	2	.09	2.70	:42	2	.09	2.70	:42	2	.09	2.70	
				STORM OF APR. 14-15, 1938												
				Apr. 14												
				<i>p. m.</i>				<i>p. m.</i>				<i>p. m.</i>				
				11:58		0	0	11:58		0	0	11:58		0	0	
				12:00	2	.02	.60	12:00	2	.02	.60	12:00	2	.02	.60	
				Apr. 15												
				<i>a. m.</i>				<i>a. m.</i>				<i>a. m.</i>				
				12:02	2	.06	1.20	12:02	2	.06	1.20	12:02	2	.06	1.20	
				:03	1	.07	.60	:03	1	.07	.60	:03	1	.07	.60	
				:05	2	.11	1.20	:05	2	.11	1.20	:05	2	.11	1.20	
				:08	3	.19	1.60	:08	3	.19	1.60	:08	3	.19	1.60	
				:10	2	.20	.30	:10	2	.20	.30	:10	2	.20	.30	
				:15	5	.29	1.08	:15	5	.29	1.08	:15	5	.29	1.08	
				:20	5	.37	.96	:20	5	.37	.96	:20	5	.37	.96	
				:25	5	.55	2.16	:25	5	.55	2.16	:25	5	.55	2.16	
				:27	2	.60	1.50	:27	2	.60	1.50	:27	2	.60	1.50	
				:30	3	.62	.40	:30	3	.62	.40	:30	3	.62	.40	
				:35	5	.64	.24	:35	5	.64	.24	:35	5	.64	.24	
				:40	5	.66	.24	:40	5	.66	.24	:40	5	.66	.24	
				:45	5	.68	.24	:45	5	.68	.24	:45	5	.68	.24	
				1:05	20	.68	0	1:05	20	.68	0	1:05	20	.68	0	
				:10	5	.69	.12	:10	5	.69	.12	:10	5	.69	.12	
				:20	10	.72	.18	:20	10	.72	.18	:20	10	.72	.18	
				:30	10	.82	.60	:30	10	.82	.60	:30	10	.82	.60	
				:40	10	.87	.30	:40	10	.87	.30	:40	10	.87	.30	
				2:10	30	.92	.10	2:10	30	.92	.10	2:10	30	.92	.10	
				:15	5	.93	.12	:15	5	.93	.12	:15	5	.93	.12	
				3:10	55	.93	0	3:10	55	.93	0	3:10	55	.93	0	
				:15	5	.94	.12	:15	5	.94	.12	:15	5	.94	.12	
				:20	5	.95	.12	:20	5	.95	.12	:20	5	.95	.12	
				:25	5	1.03	.96	:25	5	1.03	.96	:25	5	1.03	.96	
				:30	5	1.04	.12	:30	5	1.04	.12	:30	5	1.04	.12	
				:45	15	1.05	.04	:45	15	1.05	.04	:45	15	1.05	.04	
				:50	5	1.09	.48	:50	5	1.09	.48	:50	5	1.09	.48	
				:55	5	1.13	.48	:55	5	1.						

TABLE 58.—Rainfall at station 27 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939			
Apr. 15				May 16				May 17				May 17			
a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
11:45-----	3	2.19	0.80	7:16-----		0	0	6:45-----	5	0.54	0.24	7:15-----		0	0
:50-----	2	2.20	.30	:17-----	1	.01	.60	:50-----	5	.57	.36	:20-----	5	.03	.32
12:00-----	10	2.22	.12	:20-----	3	.03	.40	:55-----	5	.61	.43	:30-----	10	.09	.36
				:30-----	10	.05	.12	:56-----	1	.62	.60	:40-----	10	.11	.16
				:40-----	10	.06	.06	:57-----	4	.62	0	:50-----	10	.16	.30
				:45-----	5	.07	.12	7:00-----	4	.62	0	8:00-----	10	.22	.36
								:05-----	5	.63	.12	:10-----	10	.25	.18
								:10-----	5	.64	.12	:20-----	10	.28	.18
								:20-----	10	.64	0	:30-----	10	.33	.30
								:22-----	2	.65	.30				
								:25-----	3	.66	.20	May 18			
								:30-----	5	.66	0	a. m.			
								:35-----	5	.68	.24	6:54-----	624	.33	0
								:40-----	5	.69	.12	:55-----	1	.36	1.80
								8:16-----	36	.69	0	7:00-----	5	.37	.12
								:20-----	4	.70	.15	:05-----	5	.54	2.04
								:30-----	10	.72	.12	:07-----	2	.55	.30
								:40-----	10	.73	.06	:10-----	3	.55	T
								:50-----	10	.74	.06	:20-----	10	.57	.12
								10:00-----	70	.74	0	STORM OF MAY 20, 1939			
								11:00-----	60	.75	.01	[Record lost because of instrument failure]			

TABLE 59.—Rainfall at station 31 for selected storms, 1937-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 21-22, 1937				STORM OF DEC. 21-22, 1937—Con.				STORM OF JAN. 23, 1938—Con.				STORM OF JAN. 23, 1938—Con.			
Dec. 21				Dec. 22				Jan. 23				Jan. 23			
p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
8:00-----		0	0	12:50-----	5	0.94	0.72	2:25-----	5	0.51	0.36	11:35-----	81	2.25	0
9:00-----	60	.02	.02	:55-----	5	.96	.24	:30-----	5	.52	.12	:40-----	4	2.27	.30
12:00-----	180	.02	0	1:00-----	5	.98	.24	:35-----	5	.55	.36	:45-----	5	2.28	.12
				:15-----	15	1.03	.20	:40-----	5	.57	.24	:55-----	10	2.28	0
				:30-----	15	1.07	.16	:45-----	5	.59	.24	12:00-----	5	2.30	.24
				:45-----	15	1.11	.16	:50-----	5	.62	.36				
				2:00-----	15	1.15	.16	:55-----	5	.63	.12	p. m.			
				:15-----	15	1.18	.12	:58-----	3	.64	.20	12:05-----	5	2.31	.12
				:30-----	15	1.22	.16	3:00-----	2	.66	.60	:30-----	25	2.31	0
				3:00-----	30	1.22	0	:05-----	5	.73	.84	1:00-----	30	2.33	.04
				:15-----	15	1.24	.08	:10-----	5	.75	.24	:30-----	30	2.34	.02
				:30-----	15	1.25	.04	:15-----	5	.79	.48	2:00-----	30	2.35	.02
				5:15-----	105	1.25	0	:20-----	5	.82	.36	3:25-----	85	2.35	0
				:30-----	15	1.26	.04	:25-----	5	.83	.12	:30-----	5	2.40	.60
				:45-----	15	1.28	.08	:30-----	5	.84	.12	:35-----	5	2.44	.48
				6:00-----	15	1.30	.08	:35-----	5	.88	.48	:40-----	5	2.47	.36
				:15-----	15	1.32	.08	:40-----	5	.91	.36	:45-----	5	2.49	.24
				:30-----	15	1.34	.08	:45-----	5	.92	.12	:50-----	5	2.50	.12
								:50-----	5	.93	.12	:55-----	5	2.50	T
								:55-----	5	.95	.24	4:00-----	5	2.51	.12
								4:00-----	5	1.00	.60	:40-----	40	2.51	0
								:15-----	15	1.05	.20	:50-----	10	2.53	.12
								:30-----	15	1.09	.16	5:00-----	10	2.55	.12
								:45-----	15	1.17	.32	:10-----	10	2.56	.06
								5:00-----	15	1.23	.24				
								:15-----	15	1.29	.24	STORM OF FEB. 16, 1938			
								:30-----	15	1.34	.20	Feb. 16			
								:45-----	15	1.40	.24	a. m.			
								6:06-----	15	1.44	.16	10:30-----		0	0
								:15-----	15	1.51	.28	:34-----	4	.01	.15
								:30-----	15	1.57	.24	:35-----	1	.04	1.80
								:45-----	15	1.63	.24	:40-----	5	.06	.24
								7:00-----	15	1.70	.28	:45-----	5	.07	.12
								:15-----	15	1.72	.08	11:00-----	15	.07	0
								:30-----	15	1.74	.08	:15-----	15	.08	.04
								:45-----	15	1.78	.16				
								8:00-----	15	1.79	.04	p. m.			
								:15-----	15	1.84	.20	12:10-----	55	.08	0
								:30-----	15	1.90	.24	:15-----	5	.10	.24
								:35-----	5	1.92	.24	:20-----	5	.10	0
								:40-----	5	1.94	.24	:24-----	4	.16	.90
								:45-----	5	1.99	.60	:25-----	1	.17	.60
								:50-----	5	2.05	.72	:30-----	5	.19	.24
								:55-----	5	2.11	.72	:35-----	5	.20	.12
								9:00-----	5	2.15	.48	1:15-----	40	.20	0
								:15-----	15	2.18	.12	:30-----	15	.21	.04
								:30-----	15	2.20	.08				
								:45-----	15	2.23	.12				
								10:00-----	15	2.23	0				
								:15-----	15	2.25	.08				

TABLE 59.—Rainfall at station 31 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF FEB. 16, 1938—Con.				STORM OF MAR. 28, 1938—Con.				STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939—Con.			
Feb. 16				Mar 28				Apr. 15				May 17			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
1:45	15	.22	0.04	4:00	5	0.64	0.24	9:55	5	1.34	1.44	6:55	5	0.55	0.48
:47	2	.22	T	:14	14	.64	0	10:00	5	1.42	.96	7:00	5	.57	.24
:50	3	.30	1.60	:15	1	.66	1.20	:03	3	1.46	.80	:20	20	.57	0
:55	5	.50	2.40	:20	5	.74	.96	:05	2	1.47	.30	:30	10	.60	.18
2:00	5	.56	.72	:25	5	.94	2.40	:10	5	1.49	.24	:40	10	.61	.06
:02	2	.57	.30	6:28	123	.94	0	:15	5	1.51	.24	8:20	40	.61	0
:04	2	.63	1.80	:30	2	.95	.30	:20	5	1.53	.24	:30	10	.63	.12
:05	1	.64	.60	:35	5	.96	.12	:25	5	1.56	.36	:40	10	.65	.12
:10	5	.69	.60	:42	7	.96	0	:28	3	1.57	.20	10:00	80	.65	0
:15	5	.71	.24	:45	3	.99	.60	:30	2	1.61	1.20	:30	30	.66	.02
:20	5	.73	.24	:47	2	1.01	.60	:45	15	1.66	.20	11:30	60	.66	0
:22	2	.81	2.40	:48	1	1.02	.60	11:00	15	1.67	.04	12:00	30	.67	.02
:23	1	.82	.60					:15	15	1.70	.12				
:25	2	.92	3.00					:25	10	1.70	0				
:30	5	1.18	3.12	STORM OF APR. 14-15, 1938				:30	5	1.75	.60	STORM OF MAY 17-18, 1939			
:31	1	1.22	2.40	Apr. 14				:35	5	1.79	.48	May 17			
:35	4	1.23	.15	<i>p. m.</i>				:37	2	1.85	1.80	<i>p. m.</i>			
:40	5	1.24	.12	11:50		0	0	:40	3	1.86	.20	6:30		0	0
:45	5	1.25	.12	12:00	5	.14	1.32	:45	5	1.87	.12	7:00		.02	.04
3:00	15	1.27	.08	Apr. 15				12:00	15	1.88	.04	:10	10	.02	0
:15	15	1.30	.12	<i>a. m.</i>				<i>p. m.</i>				:20	10	.06	.24
:30	15	1.37	.28	12:05	5	.20	.72	1:00	60	1.91	.03	:30	10	.11	.30
:45	15	1.42	.20	:10	5	.25	.60	2:00	60	1.93	.02	:40	10	.12	.06
4:00	15	1.46	.16	:12	2	.33	2.40	:17	17	1.93	0	:45	5	.14	.24
:15	15	1.50	.16	:15	3	.36	.60	:20	3	1.98	1.00	:48	3	.15	.20
STORM OF MAR. 27, 1938				:16	1	.40	2.40	:25	5	1.99	.12	:50	2	.17	.60
Mar. 27				:20	4	.42	.30	:30	5	2.00	.12	:55	5	.18	.12
<i>a. m.</i>				:25	5	.43	.12	:35	5	2.01	.12	8:00	5	.19	.12
12:05		0	0	:30	5	.44	.12	:40	5	2.03	.24	:10	10	.20	.06
:10	5	.09	1.08	1:00	30	.44	0	:45	5	2.04	.12	:20	10	.23	.18
:15	5	.15	.72	:05	5	.46	.24	:50	5	2.05	.12	:30	10	.24	.06
:30	15	.22	.28	:10	5	.47	.12	:55	5	2.05	T				
:45	15	.30	.32	:15	5	.52	.60	3:00	5	2.08	.36	May 18			
1:00	15	.36	.24	:20	5	.55	.36	:05	5	2.09	.12	<i>a. m.</i>			
:30	30	.38	.04	:25	5	.57	.24	:15	10	2.09	0	6:20	590	.24	0
2:00	30	.39	.02	:30	5	.60	.36	:20	5	2.12	.36	:22	2	.25	.30
4:00	120	.39	0	:35	5	.62	.08	:25	5	2.15	.36	:23	1	.26	.60
5:00	60	.40	.01	:45	15	.62	.08	:30	5	2.16	.12	:25	2	.27	.30
:45	45	.40	0	2:00	15	.66	.16	:35	5	2.17	.12	:30	5	.28	.12
6:00	15	.42	.08	3:05	65	.66	0	:45	10	2.17	0	:57	27	.28	0
:15	15	.42	0	:08	3	.67	.20	:50	5	2.19	.24	7:00	3	.31	.60
:30	15	.43	.04	:10	2	.69	.30					:15	15	.32	.04
:45	15	.44	.04	:15	5	.72	.36	STORM OF MAY 16-17, 1939				:25	10	.32	0
7:00	15	.47	.12	:16	1	.73	.60	May 16				:27	2	.34	.60
:15	15	.53	.24	:20	4	.74	.15	<i>p. m.</i>							
:30	15	.58	.20	:30	10	.74	0	7:10		0	0				
:45	15	.62	.16	:35	5	.75	.12	:15	5	.01	.12	May 20			
8:00	15	.64	.08	:40	5	.80	.60	:17	2	.01	T	<i>a. m.</i>			
:15	15	.64	0	:45	5	.83	.36	:19	2	.03	.60	12:26		0	0
:30	15	.68	.16	:50	5	.88	.60	:20	1	.04	.60	:30	4	.06	.90
:35	5	.93	3.00	:55	5	.89	.12	:23	3	.06	.06	:32	2	.06	0
:40	5	1.21	3.36	6:00	5	.89	0	:30	10	.05	.06	:33	1	.09	1.80
:43	3	1.40	3.80	:30	30	.91	.04	:40	10	.06	.06	:35	2	.10	.30
:45	2	1.44	1.20	7:00	30	.92	.02					:40	5	.16	.72
:50	5	1.50	.72	9:00	120	.92	0	May 17				:45	5	.21	.60
:55	5	1.57	.84	:05	5	.93	.12	<i>a. m.</i>				:50	5	.28	.84
9:00	5	1.65	.96	:10	5	.94	.12	6:16	636	.06	0	:55	5	.39	1.32
:05	5	1.71	.72	:13	3	.95	.20	:20	4	.12	.90	1:00	5	.54	1.80
:10	5	1.73	.24	:15	2	.97	.60	:23	3	.16	.80	:02	2	.57	.90
:15	5	1.75	.24	:20	5	.99	.24	:24	1	.23	4.20	:05	3	.58	.20
STORM OF MAR. 28, 1938				:25	5	1.00	.12	May 17				:10	5	.58	0
Mar. 28				:30	5	1.02	.24	<i>a. m.</i>				:15	5	.59	.12
<i>p. m.</i>				:35	5	1.04	.24	6:16	636	.06	0	:21	6	.59	0
3:47		0	0	:40	5	1.06	.24	:26	1	.28	1.20	:25	4	.62	.45
:50	3	.29	5.80	:42	2	1.08	.60	:30	4	.34	.90	:30	5	.64	.24
:52	2	.54	7.50	:44	2	1.15	2.10	:35	5	.39	.60	:35	5	.67	.36
:55	3	.62	1.60	:46	1	1.17	1.20	:40	2	.45	1.20	:40	5	.68	.12
				:50	4	1.22	.45	:42	2	.47	.60	:45	5	.69	.12

TABLE 60.—*Rainfall at station 44 for selected storms, 1937-39*

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 22, 1937				STORM OF JAN. 23, 1938—Con.				STORM OF MAR. 27, 1938				STORM OF APR. 14-15, 1938—Con.			
Dec. 22				Jan. 23				May 27				Apr. 15			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
2:15		0	0	4:30	15	1.34	0.20	12:04		0	0	7:00		60	0.93
:30	15	.06	.24	:45	15	1.41	.28	:05	1	.01	.60	8:50		110	.93
:45	15	.07	.04	5:00	15	1.47	.24	:10	5	.16	1.80	:55	5	.95	.24
3:00	15	.09	.08	:15	15	1.52	.20	:15	5	.26	1.20	9:00		5	.95
:15	15	.11	.08	:30	15	1.58	.24	:20	5	.27	.12	:04	4	.96	.15
:30	15	.14	.12	:45	15	1.61	.12	:30	10	.29	.12	:05	1	.99	1.80
:45	15	.18	.16	6:00	15	1.67	.24	:40	10	.30	.06	:10	5	1.02	.36
4:00	15	.23	.20	:15	15	1.73	.24	:45	5	.32	.24	:20	10	1.05	.18
:15	15	.31	.32	:30	15	1.79	.24	1:00	15	.33	.04	:30	10	1.11	.36
:30	15	.33	.08	:45	15	1.86	.28	:15	15	.34	.04	:35	5	1.25	1.68
:45	15	.34	.04	7:00	15	1.89	.12	:30	15	.35	.04	:40	5	1.31	.72
5:35	50	.34	0	:15	15	1.90	.04	:45	15	.36	.04	:45	5	1.46	1.80
:40	5	.36	.24	:30	15	1.95	.20	5:30	220	.36	0	10:00	15	1.56	.40
6:00	20	.36	0	:45	15	1.95	0	:45	15	.38	.08	:15	15	1.66	.40
:15	15	.42	.24	8:00	15	2.01	.24	6:00	15	.40	.08	:30	15	1.75	.36
:30	15	.43	.04	:15	15	2.06	.20	:45	45	.40	0	:35	5	1.80	.60
:45	15	.45	.08	:30	15	2.11	.20	7:00	15	.44	.16	:40	5	1.81	.12
7:00	15	.47	.08	:45	15	2.26	.60	:15	15	.50	.24	:58	18	1.81	0
:15	15	.48	.04	9:00	15	2.30	.16	:30	15	.55	.20	11:00	2	1.83	.60
:30	15	.51	.12	:15	15	2.31	.04	:45	15	.58	.12	:15	15	1.85	.08
:40	70	.51	0	:30	15	2.35	.16	8:00	15	.61	.12	:30	15	1.99	.56
:45	5	.53	.24	:52	22	2.35	0	:15	51	.63	.08	:45	15	2.00	.04
9:00	15	.54	.04	:55	3	2.36	.20	:20	5	.65	.24	12:00	15	2.03	.12
:15	15	.57	.12	10:00	5	2.37	.12	:25	5	.67	.24				
:30	15	.62	.20	11:23	83	2.37	0	:30	5	.78	1.32	p. m.			
:45	15	.65	.12	:25	2	2.40	.90	:50	20	.78	0	12:30	30	2.04	.02
10:00	15	.67	.08	:30	5	2.41	.12	:55	5	.84	.72	1:00	30	2.06	.04
:10	10	.67	0	:45	15	2.43	.08	9:00	5	.89	.60	:30	30	2.08	.04
:15	5	.70	.36	12:00	15	2.44	.04	:05	5	.90	.12	:45	15	2.08	0
:20	5	.75	.60									:50	5	2.11	.36
:25	5	.77	.24									2:07	17	2.11	0
:30	5	.78	.12									:10	3	2.13	.40
11:00	30	.78	0									:15	5	2.14	.12
:15	15	.79	.04									:30	15	2.18	.16
:30	15	.81	.08									:45	15	2.19	.04
:45	15	.83	.08									3:00	15	2.24	.20
:55	10	.84	.06									:15	15	2.30	.24
												:30	15	2.31	.04
												:45	15	2.32	.04
												5:00	15	2.32	0
												:30	30	2.33	.02
							</								

TABLE 60.—Rainfall at station 44 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939				STORM OF MAY 20, 1939—Con.			
May 17				May 18				May 20				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:40	10	0.12	0.54	6:55	617	0.41	0	12:41		0		1:20	5	0.57	0.24
:50	10	.16	.24	7:00	5	.43	.24	:45	4	.04	.60	:22	2	.58	.30
8:00	10	.22	.36	:01	1	.45	1.20	:48	3	.06	.40	:23	1	.59	.60
:05	5	.25	.36	:02	1	.54	5.40	:50	2	.07	.30	:25	2	.59	T
:07	2	.28	.90	:04	2	.61	2.10	:53	3	.12	1.00	:27	2	.60	.30
:15	8	.28	0	:05	1	.62	.60	:55	2	.13	.30	:30	3	.62	.40
:20	5	.31	.36	:08	3	.62	0	:57	2	.14	.30	:40	10	.70	.48
:25	5	.34	.36	:10	2	.63	.30	1:00	3	.17	.60	:50	10	.74	.24
:30	5	.35	.12	:15	5	.64	.12	:05	5	.32	1.80	2:00	10	.76	.12
:33	3	.35	0	:20	5	.66	.24	:08	3	.45	2.60	:02	2	.79	.90
:35	2	.37	.60					:10	2	.60	1.50	:05	3	.80	.20
:38	3	.41	.80					:12	2	.53	.90	:10	5	.81	.12
								:15	3	.55	.40				

TABLE 61.—Rainfall at station 55 for selected storms, 1937-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 21-22, 1937				STORM OF DEC. 21-22, 1937—Con.				STORM OF JAN. 23, 1938—Con.				STORM OF FEB. 16, 1938—Con.			
Dec. 21				Dec. 22				Jan 23				Feb. 16			
p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
7:20		0	0	2:00	10	1.27	0.18	9:30	15	2.11	0.04	2:27	2	1.46	2.70
:30	10	.01	.06	:10	10	1.28	.06	:45	15	2.12	.04	:30	3	1.47	.20
:40	10	.02	.06	:20	10	1.29	.06	10:00	15	2.14	.08	:45	15	1.49	.08
:50	10	.05	.18	:30	10	1.30	.06	:15	15	2.16	.08	3:00	15	1.51	.08
8:00	10	.06	.06	5:00	150	1.30	0	:30	15	2.17	.04	:15	15	1.56	.20
Dec. 22				:15	15	1.31	.04	11:30	60	2.17	0	:30	15	1.63	.28
a. m.				:30	15	1.34	.12	:45	15	2.19	.08	:45	15	1.68	.20
1:40	340	.06	0	:45	15	1.36	.08	12:00	15	2.23	.16	4:00	15	1.73	.20
:50	10	.07	.06	6:00	15	1.38	.08					:15	15	1.73	T
2:00	10	.08	.06					p. m.				:30	15	1.75	.08
:15	15	.12	.16	STORM OF JAN. 23, 1938				1:00	60	2.24	.01				
:30	15	.14	.08	Jan. 23				2:00	60	2.26	.02	STORM OF MARCH 27, 1938			
:45	15	.16	.08	a. m.				3:12	72	2.26	0	Mar. 27			
3:00	15	.20	.16	12:34		0	0	:15	3	2.31	1.00	a. m.			
:15	15	.22	.08	:35	1	.02	1.20	:20	5	2.36	.60	12:05		0	0
:30	15	.26	.16	:40	5	.06	.48	:45	25	2.36	0	:10	5	.19	2.28
:45	15	.32	.24	:55	15	.06	0	4:00	15	2.38	.08	:15	5	.33	1.68
4:00	15	.42	.40	1:00	5	.10	.48	:15	15	2.40	.08	:16	1	.36	1.80
:15	15	.46	.16	:05	5	.13	.36	:30	15	2.42	.08	:20	4	.37	.15
:30	15	.48	.08	:10	5	.14	.12	:45	15	2.43	.04	:30	10	.38	.06
5:00	30	.48	0	:15	5	.15	.12	STORM OF FEB. 16, 1938				:40	10	.45	.42
:30	30	.50	.04	:20	5	.17	.24	Feb. 16				:45	5	.47	.24
:45	15	.50	0	:25	5	.21	.48	a. m.				:50	5	.52	.60
6:00	15	.52	.08	:40	15	.21	0	10:14		0	0	1:00	10	.54	.12
:15	15	.54	.08	:45	5	.22	.12	:15	1	.01	.60	:10	10	.55	.06
:30	15	.56	.08	2:00	15	.28	.24	:25	10	.01	0	:20	10	.56	.06
:45	15	.58	.08	:15	15	.42	.56	:30	5	.03	.24	:30	10	.57	.06
7:00	15	.60	.08	:30	15	.48	.24	:35	5	.04	.12	:40	10	.58	.06
:30	30	.60	0	:45	15	.54	.24	:40	5	.05	.12	4:05	145	.58	0
8:00	30	.62	.04	3:00	15	.65	.44	11:15	35	.05	0	:10	5	.59	.12
9:08	68	.62	0	:15	15	.74	.36	:30	15	.06	.04	5:45	95	.59	0
:10	2	.65	.90	:30	15	.81	.28	:45	15	.07	.04	:50	5	.61	.24
:12	2	.70	1.50	:45	15	.85	.16					6:40	50	.61	0
:15	3	.72	.40	4:00	15	.90	.20	p. m.				:50	10	.63	.12
:30	15	.75	.12	:15	15	.96	.24	12:01	16	.07	0	:10	10	.66	.18
:45	15	.78	.12	:30	15	1.02	.24	:05	4	.09	.30	:15	15	.72	.24
10:00	15	.79	.04	:45	15	1.09	.28	:10	5	.11	.24	:30	15	.75	.12
:05	5	.82	.36	5:00	15	1.16	.28	:20	10	.14	.18	:45	15	.79	.16
:10	5	.86	.48	:15	15	1.20	.16	:30	10	.17	.18	8:00	15	.80	.04
:15	5	.87	.12	:30	15	1.25	.20	:40	10	.19	.12	:15	15	.81	.04
:20	5	.88	.12	:45	15	1.31	.24	1:20	40	.19	0	:20	5	.83	.24
11:00	40	.88	0	6:00	15	1.35	.16	:25	5	.20	.12	:25	5	.88	.60
:15	15	.90	.08	:15	15	1.41	.24	:40	15	.20	0	:30	5	1.04	1.92
:30	15	.91	.04	:30	15	1.50	.36	:45	5	.21	.12	:35	5	1.34	3.60
:45	15	.91	0	:45	15	1.56	.24	:48	3	.26	1.00	:40	5	1.44	1.20
12:00	5	.92	.12	7:00	15	1.62	.24	:50	2	.37	3.30	:42	2	1.49	1.50
:55	5	.97	.60	:15	15	1.64	.08	:55	5	.77	4.80	:45	3	1.50	.20
12:00	5	1.01	.48	:30	15	1.68	.16	2:00	5	.85	.96	:50	5	1.54	.48
p. m.				:45	15	1.69	.04	:05	5	.90	.60	:55	5	1.62	.96
12:15	15	1.05	.16	8:00	15	1.72	.12	:10	5	.91	.12	9:00	5	1.72	1.20
:30	15	1.09	.16	:15	15	1.78	.24	:15	5	.94	.36	:05	5	1.77	.60
:45	15	1.13	.16	:30	15	1.86	.32	:19	4	1.05	1.65	:10	5	1.83	.72
1:00	15	1.17	.16	:45	15	1.96	.40	:20	1	1.18	7.80	:20	10	1.84	.06
:15	15	1.21	.16	9:00	15	2.06	.40	:25	5	1.37	2.28	:30	10	1.85	.06
:30	15	1.24	.12	:15	15	2.10	.16								
:50	20	1.24	0												

TABLE 61.—Rainfall at station 55 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAR. 28, 1938				STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939				STORM OF MAY 17-18, 1939—Con.			
Mar. 28				Apr. 15				May 16				May 17			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
3:46		0	0	9:10	5	0.71	0.36	7:23		0	0	8:00	5	0.17	0.36
:50	4	.45	6.75	:15	5	.75	.48	:25	2	.01	.30	:10	10	.15	.06
:53	3	.54	1.80	:20	5	.75	T	:30	5	.02	.12	:20	10	.21	T
4:13	20	.54	0	:25	5	.76	.12	:35	5	.05	.36	:22	2	.21	.18
:14	1	.60	3.60	:30	5	.81	.60	:40	5	.06	.12	:25	3	.24	.60
:15	1	.61	.60	:35	5	.84	.36	:45	5	.07	.12	:30	5	.26	.24
:20	5	.75	1.68	:40	5	.96	1.44					:40	10	.27	.06
:22	2	.84	2.70	:50	10	1.10	.84	May 17				May 18			
:25	3	.87	.60	10:00	10	1.20	.60	a. m.				a. m.			
:30	5	.88	.12	:05	5	1.22	.24	6:23	638	.07	0	6:30			
STORM OF APR. 14-15, 1938				:10	5	1.25	.36	:25	2	.08	.30	:35	5	.30	.36
Apr. 14				:15	5	1.28	.36	:28	3	.10	.40	7:05	30	.30	0
p. m.				:17	2	1.29	.30	:30	2	.19	2.70	:07	2	.38	2.40
11:55		0	0	:20	3	1.34	1.00	:35	5	.32	1.56	:10	3	.39	.20
12:00	5	.03	.03	:25	5	1.36	.24	:40	5	.47	1.80	:16	6	.39	0
Apr. 15				:30	5	1.38	.24	:45	4	.60	1.80	:20	4	.43	.60
a. m.				:35	5	1.41	.36	:47	2	.64	1.20	:25	5	.44	.12
12:05	5	.11	.96	:40	5	1.49	.96	:50	3	.65	.20	:32	7	.44	0
:10	5	.14	.36	:45	5	1.52	.36	:55	5	.70	.60	:35	3	.46	.40
:11	1	.18	2.40	11:00	15	1.53	.04	:05	5	.73	.36	:40	5	.47	.12
:15	4	.22	.60	:15	15	1.56	.12	:10	5	.75	.24	STORM OF MAY 20, 1939			
:20	5	.23	.12	:30	15	1.61	.20	:20	15	.75	0	May 20			
:30	10	.24	.06	:45	15	1.67	.24	:30	10	.76	.06	a. m.			
:40	10	.25	.06	12:00	15	1.68	.04	:40	10	.78	.12	12:32		0	0
1:05	25	.25	0	p. m.				:50	10	.79	.06	:35	3	.02	.40
:10	5	.29	.48	12:15	15	1.70	.08	:55	10	.81	.12	:40	5	.05	.36
:15	5	.31	.24	:30	15	1.71	.04	:05	10	.83	.12	:43	3	.10	1.00
:20	5	.36	.60	1:00	30	1.71	0	:10	10	.83	.12	:44	1	.13	1.80
:25	5	.38	.24	:30	30	1.72	.02	:20	10	.83	0	:45	1	.14	.60
:30	5	.42	.48	:45	30	1.74	.04	:30	10	.84	.06	:50	5	.18	.48
:45	15	.45	.12	:05	20	1.74	0	:40	10	.86	.12	:55	5	.20	.24
2:00	15	.49	.16	:25	5	1.76	.24	:50	10	.88	.12	1:00	5	.24	.45
3:05	65	.49	0	:30	5	1.79	.36	STORM OF MAY 17-18, 1939				:05	5	.32	.96
:10	5	.51	.24	:35	5	1.83	.48	May 17				:10	5	.42	1.20
:15	5	.52	.12	:40	5	1.86	.36	p. m.				:15	5	.53	1.68
:30	15	.52	0	:50	10	1.86	0	7:15		0	0	:16	1	.57	.60
:35	5	.53	.12	3:00	10	1.87	.06	:20	5	.01	.12	:20	4	.59	.30
:40	5	.59	.72	:05	5	1.93	.72	:25	5	.02	.12	:24	4	.62	.45
:50	10	.61	.12	:10	5	1.95	.24	:30	5	.05	.36	:25	1	.62	T
4:00	10	.62	.06	:15	5	1.98	.36	:35	5	.08	.36	:30	5	.65	.36
5:00	60	.62	0	:20	5	2.05	.84	:40	5	.09	.12	:40	10	.71	.36
6:00	60	.63	.01	:25	5	2.07	.24	:45	5	.11	.24	:50	10	.73	.12
7:00	60	.65	.02	:31	6	2.07	0	:50	5	.12	.12	:55	5	.74	.12
8:00	60	.66	.01	:32	1	2.09	1.20	:55	5	.14	.24	2:00	5	.78	.48
9:00	60	.67	.01	:35	3	2.09	0	STORM OF MAY 17-18, 1939				:10	10	.80	.12
:05	5	.68	.12	:40	5	2.12	.36	May 17				STORM OF MAY 20, 1939			
				:45	5	2.13	.12	p. m.				May 20			
				4:30	45	2.13	0	7:15		0	0	a. m.			
				5:00	30	2.14	.02	:20	5	.01	.12	12:36		0	0
				:10	10	2.14	0	:25	5	.02	.12	:40	4	.03	.45
				:15	5	2.21	.84	:30	5	.05	.36	:45	5	.06	.36

TABLE 62.—Rainfall at station 56 for selected storms, 1939

[Recording gage installed February 1, 1939]

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939				STORM OF MAY 17-18, 1939				STORM OF MAY 17-18, 1939—Con.			
May 16				May 17				May 17				May 18			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:30		0	0	7:00	3	0.66	0.20	6:45		0	0	6:51	616	.44	0
:45	15	.03	.12	:05	5	.67	.12	:05	15	.01	.04	:53	2	.47	.90
May 17				:24	19	.67	0	:15	15	.02	.04	:55	2	.61	4.20
a. m.				:25	1	.68	.60	:20	5	.03	.12	:57	2	.74	3.90
6:23	638	.03	0	:30	5	.69	.12	:25	5	.05	.24	7:00	3	.76	.40
:25	2	.06	.90	:40	10	.69	0	:30	5	.09	.48	:10	10	.77	.06
:28	3	.11	1.00	:43	3	.70	.20	:35	5	.14	.60	:20	10	.78	.06
:29	1	.15	2.40	:45	2	.71	.30	:40	5	.16	.24	STORM OF MAY 20, 1939			
:30	1	.16	.60	:52	7	.71	0	:45	5	.16	.24	May 20			
:31	1	.17	.60	:54	2	.73	.60	:50	10	.21	.30	a. m.			
:35	4	.31	2.10	:55	1	.74	.60	8:00	10	.29	.48	12:36		0	0
:38	3	.44	2.60	8:00	5	.75	.12	:10	10	.34	.30	:40	4	.03	.45
:40	2	.47	.90	:15	15	.75	0	:15	5	.36	.24	:45	5	.06	.36
:42	2	.49	.60	:30	15	.76	.04	:17	2	.37	.30	:48	3	.09	.60
:45	3	.53	.80	:45	15	.78	.08	:20	3	.38	.20	STORM OF MAY 20, 1939			
:50	5	.58	.60	12:00	195	.78	0	:27	7	.38	0	May 20			
:55	5	.63	.60	p. m.				:28	1	.40	1.20	a. m.			
:57	2	.65	.60	1:00	60	.79	0.1	:30	2	.42	.60	12:36		0	0
								:32	2	.43	.30	:40	4	.03	.45
								:35	3	.44	.20	:45	5	.06	.36

TABLE 62.—Rainfall at station 56 for selected storms 1939—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 20, 1939				STORM OF MAY 20, 1939—Con.				STORM OF MAY 20, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 20				May 20				May 20				May 20			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
12:50	2	0.09		1:08	3	0.45	1.00	1:20	1	0.59	0.60	1:50	10	0.76	0.12
:53	3	.10	0.20	:10	2	.47	.60	:25	5	.62	.36	:55	5	.76	0
:55	2	.14	1.20	:13	3	.48	.20	:30	5	.68	.72	2:00	5	.79	.36
1:00	5	.25	1.32	:15	2	.50	.60	:40	10	.74	.36	:05	5	.81	.24
:05	5	.40	1.80	:19	4	.58	1.20								

TABLE 63.—Rainfall at station 66 for selected storms, 1938-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF JAN. 23, 1938				STORM OF JAN. 23, 1938—Con.				STORM OF MAR. 27, 1938				STORM OF APR. 14-15, 1938—Con.			
Jan. 23				Jan. 23				Mar. 27				Apr. 15			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
12:30	5	0	0	11:45	15	2.24	0.16	12:04	1	0	0	12:05	5	8.08	0.36
:35	1	.02	.24	12:00	15	2.26	.08	:05	1	.05	3.00	:10	5	.14	.72
:36	4	.04	1.20					:10	5	.14	1.08	:15	5	.16	.24
:40	4	.05	.15					:15	5	.25	1.32	:20	5	.17	.12
:50	10	.05	0					:20	5	.27	.24	:25	5	.18	.12
:55	5	.06	.12	12:30	30	2.27	.02	:30	10	.27	0	:30	5	.19	.12
1:00	5	.07	.12	1:00	30	2.28	.02	:35	5	.28	.12	1:03	33	.19	0
:03	3	.10	.60	:30	30	2.29	.02	:40	5	.32	.48	:05	2	.22	.90
:05	2	.11	.30	3:22	112	2.29	0	:45	5	.36	.48	:10	5	.25	.36
:10	5	.11	0	:25	3	2.33	.80	:45	5	.36	.48	:15	5	.29	.48
:15	5	.13	.24	:30	5	2.35	.24	1:00	15	.43	.28	:20	5	.32	.36
:20	5	.16	.36	:45	15	2.38	.12	:15	15	.45	.08	:25	5	.37	.60
:22	2	.19	.90	4:00	15	2.39	.04	:30	15	.46	.04	:30	5	.39	.24
:25	3	.20	.20	:30	30	2.39	0	:45	15	.48	.08	:45	15	.42	.12
:30	5	.21	.12	:45	15	2.43	.16	5:45	240	.48	0	2:00	15	.47	.20
:40	10	.22	.06	5:00	15	2.45	.08	6:00	15	.50	.08	3:04	64	.47	0
:50	10	.23	.06					:30	30	.50	0	:05	1	.48	.60
:55	5	.26	.36					:45	15	.52	.08	:10	5	.49	.12
2:00	5	.27	.12	STORM OF FEB. 16, 1938				7:00	15	.55	.12	:15	20	.49	0
:03	3	.29	.40					:15	15	.61	.24	:30	5	.50	.12
:05	2	.34	1.50					:30	15	.65	.16	:35	5	.58	.96
:10	5	.36	.24					:45	15	.68	.12	:40	5	.60	.24
:15	5	.39	.36	Feb. 16				8:00	15	.69	.04	:45	5	.61	.12
:30	15	.44	.20	a. m.				:15	15	.70	.04	:50	5	.61	.12
:45	15	.51	.28	10:18		0	0	:20	5	.71	.12	6:00	130	.61	0
:50	5	.52	.12	:20	2	.01	.30	:25	5	.81	1.20	7:00	60	.63	.02
:53	3	.57	1.00	:25	5	.02	.12	:27	2	.86	1.50	8:00	60	.64	.01
:55	2	.59	.60	:30	5	.04	.24	:30	3	.87	.20	:45	45	.64	0
3:00	5	.63	.48	11:00	30	.06	.04	:45	15	.87	0	9:00	15	.66	.08
:05	5	.67	.48	:30	30	.07	.02	:50	5	.89	.24	:06	6	.66	0
:10	5	.71	.48	12:00	30	.08	.02	:55	5	.91	.24	:10	4	.70	.60
:15	5	.74	.36					9:00	5	.96	.60	:15	5	.72	.24
:20	5	.75	.12					:05	5	1.02	.72	:20	5	.73	.12
:25	5	.76	.12					:10	5	1.03	.12	:25	5	.75	.24
:30	5	.83	.84					:15	5	1.04	.12	:28	3	.76	.20
:45	15	.87	.16					:20	5	1.05	.12	:30	2	.81	1.50
4:00	15	.94	.28	12:13	13	.08	0	:25	5	1.06	.12	:35	5	.84	.36
:15	15	1.00	.24	:15	2	.11	.90	STORM OF MAR. 28, 1938				:40	5	.91	.84
:30	15	1.07	.28	:20	5	.12	.12	Mar. 28				:45	5	.98	.84
:45	15	1.14	.28	:25	5	.13	.12	3:45		0	0	:50	5	1.05	.84
5:00	15	1.20	.24	:30	5	.15	.24	:50	5	.43	5.16	:55	5	1.09	.48
:15	15	1.24	.16	:35	5	.16	.12	:55	5	.53	1.20	10:00	5	1.11	.24
:30	15	1.30	.24	:40	10	.16	0	4:00	5	.54	.12	:05	5	1.13	.24
:45	15	1.35	.20	:45	5	.17	.12	:10	10	.54	0	:10	5	1.15	.24
6:00	15	1.41	.24	:50	5	.24	.84	:15	5	.56	.24	:15	5	1.19	.48
:15	15	1.45	.16	:55	5	.65	4.92	:17	2	.58	.60	:20	1	1.20	.60
:30	15	1.54	.36	2:00	5	.72	.84	:20	3	.70	2.40	:25	4	1.27	1.05
:45	15	1.61	.28	:05	5	.86	1.68	:21	1	.77	4.20	:30	5	1.30	.36
7:00	15	1.66	.20	:10	5	.88	.24	:25	4	.81	.60	:35	5	1.32	.24
:15	15	1.68	.08	:15	5	.89	.12	:30	5	.82	.12	:40	5	1.33	.20
:30	15	1.71	.12	:16	1	.90	.60	STORM OF APR. 14-15, 1938				:45	5	1.43	.48
:45	15	1.72	.04	:19	3	1.01	2.20	Apr. 14				:50	5	1.45	.24
8:00	15	1.73	.04	:20	1	1.02	.60	11:55		0	0	:05	5	1.46	.12
:15	15	1.79	.24	:25	5	1.24	2.64	12:00	5	.05	.60	:10	5	1.48	0
:30	15	1.86	.28	:29	4	1.38	2.10					:15	5	1.50	.24
:45	15	1.98	.48	:30	1	1.39	.60					:20	5	1.52	.12
9:00	15	2.06	.32	:45	15	1.43	.16					:25	5	1.54	.24
:15	15	2.10	.16	3:00	15	1.46	.12					:30	5	1.56	.24
:30	15	2.17	.12	:15	15	1.49	.12					:35	5	1.57	.12
:45	15	2.18	.04	:30	15	1.56	.28					:40	5	1.59	.24
10:00	15	2.19	.04	:45	15	1.61	.20								
:15	15	2.20	.04	4:00	15	1.66	.20								
11:30	75	2.20	0	:15	15	1.68	.08								

TABLE 63.—Rainfall at station 66 for selected storms, 1938-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.			
Apr. 15				May 16				May 17				May 18			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
12:15	15	1.61	0.08	7:30	5	0.03	0.24	10:30	90	1.00	0	7:10	2	0.82	0.60
:30	15	1.62	.04	:35	5	.05	.24	11:00	30	1.02	.04	:15	5	.83	.12
2:15	105	1.62	0	:40	5	.06	.12					:16	1	.84	.60
:20	5	1.64	.24	May 17				STORM OF MAY 17-18, 1939				:17	1	.87	1.80
:25	5	1.66	.24	<i>a. m.</i>				May 17				:20	3	.90	.60
:30	5	1.68	.24	6:24	639	.07	T	6:50				:25	5	.91	.12
:33	3	1.72	.80	:25	1	.10	1.80	7:00	10	.01	.06	10:00	155	.91	0
:35	2	1.73	.30	:26	1	.14	2.40	:10	10	.02	.06	11:00	60	.93	.02
:56	21	1.73	0	:30	4	.27	1.95	:23	13	.02	0	STORM OF MAY 20, 1939			
3:00	4	1.82	1.35	:35	5	.49	2.64	:25	2	.03	.30	May 20			
:03	3	1.88	1.20	:36	1	.52	1.80	:30	5	.06	.36	<i>a. m.</i>			
:05	2	1.89	.30	:39	3	.56	.80	:40	10	.11	.30	12:35	5	0	0
:10	5	1.90	.12	:40	1	.60	2.40	:50	10	.16	.30	:40	5	.02	.24
:15	5	1.95	.60	:41	1	.65	3.00	8:00	10	.19	.18	:42	2	.03	.30
:16	1	1.99	2.40	:45	4	.73	1.20	:10	10	.21	.12	:44	2	.08	1.50
:20	4	2.01	.30	:50	5	.77	.45	:20	10	.24	.18	:45	1	.08	T
:30	10	2.02	.06	:53	3	.83	1.20	:25	5	.25	.12	:50	5	.10	.24
:40	10	2.05	.18	:55	2	.84	.30	:28	3	.26	.20	:55	5	.12	.24
:50	10	2.07	.12	7:00	5	.87	.36	:30	2	.28	.60	1:00	5	.14	.24
4:50	60	2.07	0	:05	5	.90	.36	:35	5	.33	.60	:05	5	.18	.48
5:00	10	2.08	.06	:10	5	.90	T					:10	5	.32	1.68
:07	7	2.08	0	:15	5	.91	.12	May 18				:12	2	.40	2.40
:10	3	2.11	.60	:28	13	.91	0	<i>a. m.</i>				:15	3	.46	1.20
:13	3	2.16	1.00	:30	2	.92	.30	6:55	620	.33	0	:20	5	.48	.24
:15	2	2.17	.30	:40	10	.93	.06	:59	4	.43	1.50	:23	3	.54	1.20
STORM OF MAY 16-17, 1939				:50	10	.94	.06	7:00	1	.44	.60	:25	2	.55	.30
May 16				:57	7	.94	0	:01	1	.45	.60	:30	5	.59	.48
7:20	5	0	0	8:00	3	.98	.80	:05	4	.65	3.00	:40	10	.66	.42
:25	5	.01	.12	:30	30	.99	.02	:08	3	.80	3.00	:50	10	.69	.18
				9:00	30	1.00	.02					2:00	10	.72	.18
												:10	10	.75	.18

TABLE 64.—Rainfall at station 69 for selected storms, 1937-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 22, 1937				STORM OF DEC. 22, 1937—Con.				STORM OF JAN. 23, 1938—Con.				STORM OF JAN. 23, 1938—Con.			
Dec. 22				Dec. 22				Jan. 23				Jan. 23			
<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
1:50		0	0	10:10	15	0.76	0	1:10	5	0.16	1.20	6:45	15	1.83	0.28
2:00	10	.01	.06	:15	5	.79	.36	:12	2	.16	0	:50	5	1.85	.24
:10	10	.01	0	:20	5	.83	.48	:15	3	.23	1.40	7:00	10	1.86	.06
:15	5	.02	.12	:25	5	.85	.24	:17	2	.30	2.10	:10	10	1.88	.12
:20	5	.04	.24	11:10	45	.85	0	:20	3	.30	0	:15	5	1.88	0
:25	5	.05	.12	:40	30	.87	.04	:30	10	.33	.18	:18	3	1.90	.40
:30	5	.07	.24	:57	17	.87	0	:40	10	.34	.06	:20	2	1.90	0
:35	5	.08	.12	12:00	3	.90	.60	:43	3	.34	0	:30	10	1.91	.06
:40	5	.09	.12					:45	2	.37	.90	:45	15	1.93	.08
:52	12	.09	0	<i>p. m.</i>				:47	2	.40	.90	8:00	15	1.95	.08
:55	3	.11	.40	12:05	5	.94	.48	:50	3	.40	0	:10	10	1.99	.24
3:00	5	.13	.24	:10	5	.98	.48	:55	5	.42	.24	:15	5	2.02	.36
:10	10	.16	.18	:40	30	1.06	.16	:59	4	.46	.60	:20	5	2.04	.24
:20	10	.17	.06	1:10	30	1.14	.16	2:00	1	.50	2.40	:25	5	2.05	.12
:30	10	.18	.06	:40	30	1.23	.18	:01	1	.55	3.00	:30	5	2.07	.24
:35	5	.20	.24	:50	10	1.25	.12	:05	4	.59	.70	:35	5	2.12	.60
:40	5	.22	.24	2:20	30	1.25	0	:10	5	.64	.60	:40	5	2.17	.60
:50	10	.27	.30	:30	10	1.27	.12	:20	10	.69	.30	:45	5	2.21	.48
4:00	10	.31	.24	:40	10	1.29	.12	:30	10	.74	.30	:50	5	2.23	.24
:05	5	.35	.48	4:45	125	1.29	0	:40	10	.79	.30	:55	5	2.25	.24
:10	5	.39	.48	5:00	15	1.31	.08	:45	5	.80	.12	9:00	5	2.26	.12
:15	5	.42	.36	:10	10	1.33	.12	:50	5	.88	.96	:10	10	2.29	.18
:20	5	.46	.24	:20	10	1.35	.12	:55	5	.92	.48	:20	10	2.31	.12
:30	10	.47	.06	:30	10	1.37	.12	3:00	5	.95	.36	:25	5	2.32	.12
:40	10	.48	.06	:40	10	1.39	.12	:10	10	1.00	.30	:40	15	2.32	0
6:00	80	.51	.01	:50	10	1.42	.18	:20	10	1.01	.06	:55	15	2.33	.04
:05	5	.53	.24	STORM OF JAN. 23, 1938				:25	5	1.04	.36	10:00	5	2.34	.12
:10	5	.54	.12	Jan. 23				:40	15	1.08	.16	:30	30	2.35	.02
:40	30	.58	.08	<i>a. m.</i>				:45	5	1.14	.72	11:22	52	2.35	0
7:10	30	.61	.06	12:30	5	.02	0	4:00	15	1.20	.24	:25	3	2.37	.40
:40	30	.62	.02	:35	17	.02	0	:15	15	1.25	.20	:30	5	2.39	.24
8:42	62	.62	0	:56	4	.03	.15	:30	15	1.32	.28	:40	10	2.40	.06
:45	3	.63	.20	:58	2	.06	.90	:45	15	1.38	.24	:45	5	2.42	.24
:55	10	.63	0	1:05	7	.06	0	5:00	15	1.44	.24	:50	5	2.43	.12
9:00	5	.64	.12					:15	15	1.48	.16				
:15	15	.67	.12					:30	15	1.53	.20	<i>p. m.</i>			
:30	15	.71	.16					:45	15	1.57	.16	12:40	50	2.44	.01
:45	15	.73	.08					6:00	15	1.63	.24	1:13	33	2.44	0
:50	5	.75	.24					:15	15	1.70	.28	:15	2	2.45	.30
:55	5	.76	.12					:30	15	1.76	.24	3:17	122	2.45	0

TABLE 64.—Rainfall at station 69 for selected storms, 1938-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF JAN. 23, 1938—Con.				STORM OF MAR. 27, 1938—Con.				STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939—Con.			
Jan. 23				Mar. 27				Apr. 15				May 17			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
3:20	3	2.48	.60	4:00	130	0.38	0	5:33	27	0.61	0	6:21	641	0.05	0
:25	5	2.52	.48	5:00	60	.39	.01	:35	2	.68	2.10	:25	4	.14	1.35
:30	5	2.54	.24	6:00	60	.40	.01	:40	5	.72	.48	:26	1	.16	1.20
:40	10	2.56	.12	:35	35	.40	0	:45	5	.73	.12	:28	2	.24	2.40
:50	10	2.58	.12	:40	5	.41	.12	:55	10	.74	.06	:29	1	.25	.60
4:00	10	2.59	.06	:50	10	.43	.12	6:05	130	.75	.30	:30	1	.29	2.40
:30	30	2.60	.02	7:00	10	.46	.18	7:05	60	.76	.01	:35	5	.52	2.76
:35	5	2.61	.12	:10	10	.49	.18	8:05	60	.77	.01	:37	2	.58	1.80
:40	5	2.62	.12	:20	10	.51	.12	:48	43	.77	0	:38	1	.60	1.20
:45	5	2.64	.24	:30	10	.53	.12	:50	2	.78	.30	:40	2	.61	.30
:50	5	2.65	.12	:40	10	.55	.12	9:05	15	.79	.04	:45	5	.67	.72
STORM OF FEB. 16, 1938				:50	10	.57	.12	:06	1	.79	0	:50	5	.72	.60
Feb. 16				8:08	18	.57	0	:10	4	.86	1.05	:54	4	.76	.60
a. m.				:10	2	.59	.60	:15	5	.87	.12	:55	1	.78	1.20
10:25	5	0	0	:15	5	.61	.24	:20	5	.88	.12	7:00	5	.80	.24
:30	5	.03	.36	:20	5	.62	.12	:25	5	.90	.24	:30	30	.82	.04
:35	5	.06	.36	:23	3	.66	.80	:26	1	.90	0	:38	8	.82	0
:37	2	.07	.30	:55	32	.66	0	:27	1	.93	1.80	:40	2	.83	.30
:40	3	.08	.20	9:00	5	.67	.12	:30	3	.94	.20	:45	5	.83	T
:55	15	.09	.04	:05	5	.69	.24	:33	3	.96	.40	:50	5	.84	.12
STORM OF MAR. 28, 1938				:10	5	.70	.12	:35	2	.98	.60	8:00	10	.87	.18
Mar. 28				STORM OF APR. 14-15, 1938				:38	3	1.06	1.60	:30	30	.87	0
p. m.				Apr. 14				:40	2	1.08	.60	:45	15	.89	.08
3:43	2	0	0	11:51	4	.02	0	:42	2	1.09	.30	STORM OF MAY 17-18, 1939			
:45	2	.11	3.30	:55	2	.07	1.50	:44	2	1.14	1.50	May 17			
:47	2	.46	10.50	:57	2	.07	1.50	:45	1	1.15	.60	p. m.			
:48	1	.54	4.80	12:00	3	.19	2.40	:55	10	1.21	.36	6:40	10	.01	.06
:49	1	.58	2.40	STORM OF APR. 14-15, 1938				10:05	10	1.26	.30	:50	10	.02	.06
:50	1	.61	1.80	Apr. 15				:10	5	1.30	.48	:10	10	.03	.06
:55	5	.65	.48	12:05	5	.24	.60	:14	4	1.33	.45	:20	10	.04	.06
4:05	10	.66	.06	:15	5	.28	.48	:15	1	1.36	1.80	:25	5	.05	.12
:10	5	.67	.12	:20	5	.33	.12	:20	5	1.40	.48	:27	2	.06	.30
:15	5	.73	.72	:25	5	.34	.12	:22	2	1.40	0	:30	3	.10	.80
:17	2	.80	2.10	:30	5	.35	.06	:25	3	1.42	.40	:35	5	.15	.60
:19	2	.92	3.60	:35	2	.36	.06	:32	2	1.46	.30	:40	5	.17	.24
:20	1	.93	.60	:40	2	.38	.04	:34	2	1.52	1.80	:50	10	.22	.30
:22	2	.94	.30	:43	3	1.04	.40	:37	2	1.53	.60	8:00	10	.28	.36
:23	1	.96	1.20	:45	2	1.05	.30	:40	3	1.54	.30	:10	10	.32	.24
:57	34	.96	0	STORM OF MAY 16-17, 1939				:55	15	1.57	.04	:15	5	.35	.36
:59	2	.98	.60	May 16				:01	1	1.58	.60	:18	3	.36	.20
5:22	23	.98	0	p. m.				:05	4	1.60	.30	:20	2	.37	.30
:25	3	.99	.20	12:05	30	1.69	.02	:15	10	1.60	0	:28	8	.37	0
6:25	60	.99	0	:35	30	1.71	.04	:20	5	1.62	.24	:30	2	.38	.30
:38	13	1.00	.04	:05	30	1.72	.02	:25	5	1.64	.24	:35	5	.40	.24
:40	2	1.02	.60	:10	15	1.74	.04	:30	5	1.66	.24	STORM OF MAY 20, 1939			
:43	3	1.04	.40	:15	5	1.75	.12	:35	5	1.68	.24	May 20			
:45	2	1.05	.30	2:10	15	1.75	0	:05	5	1.69	.02	a. m.			
STORM OF APR. 14-15, 1938				:15	5	1.76	.12	:35	30	1.71	.04	12:36	4	0	0
Apr. 14				:21	6	1.76	0	:05	30	1.72	.02	:40	4	.06	.90
p. m.				:25	4	1.83	1.05	:10	1	1.73	.02	:45	5	.10	.48
11:51	4	.02	0	:30	5	1.84	.12	:15	5	1.74	.04	:46	1	.10	T
:55	2	.07	1.50	:35	2	1.89	1.00	:20	10	1.75	.12	:47	1	.11	.60
:57	2	.07	1.50	:40	3	1.90	.30	:25	4	1.76	0	:50	3	.13	.40
12:00	3	.19	2.40	:45	3	1.91	.30	:30	5	1.77	.12	:55	5	.15	.24
STORM OF APR. 14-15, 1938				:50	3	1.92	.30	:35	5	1.78	.12	1:00	5	.25	1.20
Apr. 15				:55	3	1.93	.30	:40	5	1.79	.12	:05	5	.26	1.32
a. m.				:00	3	1.94	.30	:45	5	1.80	.12	:10	5	.27	1.32
12:05	5	.24	.60	:05	3	1.95	.30	:50	5	1.81	.12	:14	4	.50	1.45
:10	5	.28	.48	:10	3	1.96	.30	:55	5	1.82	.12	:15	1	.52	1.20
:11	1	.29	.60	:15	3	1.97	.12	:00	2	1.83	.12	:20	5	.64	1.44
:15	4	.32	.45	:20	3	1.98	.30	:05	2	1.84	.12	:25	5	.67	.36
:20	5	.33	.12	:25	3	1.99	.30	:10	2	1.85	.12	:30	5	.73	.72
:25	5	.34	.12	:30	3	2.00	.60	:15	2	1.86	.12	:35	5	.78	.60
:30	5	.35	.06	:35	3	2.01	.60	:20	2	1.87	.12	:40	5	.80	.24
:35	5	.36	.06	:40	3	2.02	.60	:25	2	1.88	.12	:45	5	.83	.18
:40	4	.37	.06	:45	3	2.03	.60	:30	2	1.89	.12	2:00	10	.84	.06
:45	4	.38	.06	:50	3	2.04	.60	:35	2	1.90	.12	:10	10	.86	.12
:50	10	.39	.06	:55	3	2.05	.60	:40	2	1.91	.12	8:00	350	.86	0
:55	7	.40	.06	:00	3	2.06	.60	:45	2	1.92	.12	9:00	60	.87	.01
:58	1	.41	.06	:05	3	2.07	.60	:50	2	1.93	.12	STORM OF MAY 16-17, 1939			
1:00	2	.42	.06	:10	3	2.08	.60	STORM OF MAY 16-17, 1939				May 16			
:10	10	.43	.06	:15	3	2.09	.60	May 16				p. m.			
:20	10	.44	.06	:20	3	2.10	.60	7:20	10	0	.18	:30	10	.03	.18
:30	10	.45	.06	:25	3	2.11	.60	:40	10	.05	.12	:40	10	.05	.12
:40	10	.46	.06	:30	3	2.12	.60	STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939			
:50	10	.47	.06	:35	3	2.13	.60	STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939			

TABLE 65.—Rainfall at station 69a for selected storms, 1938-39

[Record started February 15, 1938]

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAR. 27, 1938				STORM OF APR. 14-15, 1938—Con.				STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 17-18, 1939—Con.			
Mar 27				Apr. 14				Apr. 15				May 17			
a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
12:02	3	.02	.40	12:00	5	0.21	1.80	2:50	15	1.89	0	7:00	15	0.02	0.04
:05	5	.13	1.32					:55	5	1.90	.12	:10	10	.03	.06
:10	5	.23	1.20	Apr. 15				3:00	5	1.94	.48	:20	10	.04	.06
:15	5	.24	.12	a. m.				:15	15	2.01	.28	:25	5	.06	.24
:20	5	.25	.12	12:10	10	.26	.30	:30	15	2.05	.16	:27	2	.06	T
:25	5	.26	.12	:20	10	.31	.30	:45	15	2.08	.12	:30	3	.10	.80
:30	5	.27	.12	:30	10	.33	.12	4:50	65	2.08	0	:35	5	.14	.48
:35	5	.31	.48	1:00	30	.33	0	5:00	10	2.09	.06	:40	5	.18	.48
:40	5	.32	.12	:15	15	.45	.48	:10	10	2.11	.12	:50	10	.24	.36
:45	5	.34	.08	:30	15	.51	.24					8:00	10	.30	.36
1:00	15	.35	.04	:45	15	.54	.12	STORM OF MAY 16-17, 1939				:10	10	.34	.24
:15	15	.36	.04	2:00	15	.57	.12	May 16				:20	10	.38	.24
:30	15	.37	.04	3:00	60	.57	0	p. m.				:30	10	.39	.06
:45	15	.37	0	:05	5	.59	.24	7:25		0	0	:35	5	.40	.12
4:00	135	.37	0	:30	25	.59	0	:30	5	.02	.24	:40	5	.41	.12
5:00	60	.38	.01	:35	3	.61	.40	:35	5	.04	.24	May 18			
6:00	60	.39	.01	:35	2	.66	1.50	:40	5	.05	.12	a. m.			
:30	30	.39	0	:40	5	.69	.36					6:52	612	.41	0
:40	10	.40	.06	:50	10	.71	.12	May 17				:53	1	.44	1.80
:50	10	.42	.12	4:00	10	.71	T	a. m.				:54	1	.46	1.20
7:00	10	.45	.18	:10	10	.72	.06	6:21	641	.05	0	:55	1	.51	3.00
:15	15	.49	.16	6:00	110	.72	0	:25	4	.12	1.05	:56	1	.62	6.60
:30	15	.52	.12	:05	5	.73	.12	:28	3	.20	1.60	:58	2	.71	2.70
:45	15	.54	.08	7:00	55	.73	0	:30	2	.22	.60	7:00	2	.73	.60
8:00	15	.58	.16	:05	5	.74	.01	:35	5	.49	3.24	:05	5	.75	.24
:15	15	.59	.04	:50	50	.74	0	:38	2	.54	3.00	:17	12	.75	0
:20	5	.60	.12	:55	5	.75	.12	:40	2	.62	.90	:20	3	.76	.20
:23	3	.61	.20	9:00	5	.75	T	:45	5	.68	.72				
:25	2	.64	.90	:05	5	.76	.12	:50	5	.72	.48	STORM OF MAY 20, 1939			
:30	5	.65	.12	:10	5	.85	1.08	:52	2	.74	.60	May 20			
10:00	90	.65	0	:15	5	.86	.12	:54	2	.75	.30	a. m.			
:30	30	.66	.02	:20	5	.87	.12	:55	1	.77	1.20	12:36		0	0
11:13	43	.66	0	:25	5	.88	.12	7:00	5	.79	.24	:40	4	.07	1.05
:15	2	.68	.60	:27	2	.92	1.20	:10	10	.81	.12	:45	5	.09	.24
STORM OF MAR. 28, 1938				:30	3	.93	.20	:35	25	.81	0	:50	1	.11	1.20
Mar. 28				:35	5	.95	.24	:40	5	.82	.12	:55	4	.12	.15
p. m.				:40	5	1.06	1.32	:45	5	.83	.12	:58	5	.14	.24
3:43		0	0	:45	5	1.13	.84	:50	5	.84	.12	1:00	5	.26	1.44
:45	2	.21	6.30	:50	5	1.15	.24	:55	5	.86	.24	:05	5	.38	1.44
:50	5	.66	5.40	:55	5	1.18	.36	8:00	5	.87	.12	:08	3	.45	1.40
4:00	10	.70	.24	:57	2	1.23	1.50	11:00	180	.87	0	:10	2	.47	.60
:10	10	.72	.12	10:00	3	1.24	.20	12:00	60	.89	.02	:13	3	.49	.40
:15	5	.77	.60	:15	15	1.34	.40	p. m.				:15	2	.54	1.50
:20	5	1.01	2.88	:30	15	1.45	.44	:30	30	.90	.02	:18	3	.62	1.60
:25	5	1.02	.12	:45	15	1.55	.40	STORM OF MAY 17-18, 1939				:20	2	.65	.90
:58	33	1.02	0	11:00	15	1.56	.04	May 17				:25	5	.69	.48
5:00	2	1.03	.30	:15	15	1.59	.12	p. m.				:30	5	.76	.84
6:25	85	1.03	0	:30	15	1.65	.24	6:30	15	0.01	0.04	:35	5	.80	.48
:30	5	1.04	.12	:45	15	1.68	.12	7:45				:40	5	.83	.36
:35	5	1.05	.12	12:00	15	1.69	.04					:50	10	.85	.12
:40	5	1.07	.24	p. m.								2:00	10	.87	.12
:45	5	1.10	.36	12:30	30	1.70	.02					:03	3	.87	0
STORM OF APR. 14-15, 1938—Con.				1:00	30	1.71	.02					:05	2	.89	.60
Apr. 14				:30	30	1.72	.02								
p. m.				:40	30	1.74	.04								
11:50		0	0	:10	10	1.74	0								
:55	5	.06	.72	:15	5	1.76	.24								
				:20	5	1.77	.12								
				:25	5	1.82	.60								
				:30	5	1.83	.12								
				:35	5	1.89	.72								

TABLE 66.—Rainfall at station 70, for selected storms, 1938-39

[Record started February 14, 1938]

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAR. 27, 1938				STORM OF MAR. 27, 1938—Con.				STORM OF MAR. 27, 1938—Con.				STORM OF MAR. 27, 1938—Con.			
Mar. 27				Mar. 27				Mar. 27				Mar. 27			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
12:02	3	.03	.60	1:00	15	.32	0.12	7:15	15	0.48	0.20	8:25	2	0.65	1.20
:05	5	.10	.84	:15	15	.34	.08	:30	15	.51	.12	:27	2	.68	.90
:10	5	.21	1.65	:30	15	.35	.04	:45	15	.55	.16	:56	29	.68	T
:14	4	.22	.60	:45	15	.36	.04	8:00	15	.57	.08	:56	4	.69	.15
:15	1	.22	.12	2:00	15	.37	.04	:10	10	.57	0	9:00	3	.70	.20
:20	5	.23	.12	6:15	255	.37	0	:15	5	.58	.12	:03	3	.72	.60
:25	5	.24	.12	:30	15	.38	.04	:16	1	.59	.60	:05	2	.74	.40
:30	5	.25	.12	:45	15	.40	.08	:20	4	.60	.15	:08	3	.74	.40
:45	15	.29	.16	7:00	15	.43	.12	:23	3	.61	.20				

TABLE 66.—Rainfall at station 70 for selected storms, 1938-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAR. 28, 1938				STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939				STORM OF MAY 17-18, 1939—Con.			
Mar. 28				Apr. 15				May 16				May 17			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
3:44		0	0	1:30	5	.56	0.12	7:25		0	0	8:00	10	0.25	0.24
:45	1	.05	3.00	:45	15	.59	.12	:30	5	.02	.24	:10	10	.31	.36
:50	5	.61	6.72	2:00	15	.62	.12	:40	10	.04	.12	:20	10	.36	.30
:51	1	.65	2.40	3:02	62	.62	0					:30	10	.36	0
:55	4	.68	.45	:05	3	.65	.60					:35	5	.39	.36
4:00	5	.69	.12	:30	25	.65	0	May 17							
:10	10	.69	0	:35	5	.75	.96	a. m.				May 18			
:15	5	.74	.60	:40	5	.76	.36	6:21	641	.04	0	a. m.			
:20	5	.97	2.76	:45	5	.77	.12	:25	4	.13	1.35	6:51	616	.39	0
:23	3	.99	.40	:50	5	.78	.12	:30	5	.26	1.56	:54	3	.42	.60
:25	2	1.02	.90	6:00	130	.78	0	:35	5	.41	1.80	:55	1	.46	2.40
:30	5	1.03	.12	7:00	60	.80	.02	:40	5	.55	1.68	7:00	5	.63	2.04
:58	28	1.03	0	8:00	60	.81	.01	:45	5	.69	1.68	:05	5	.75	1.44
5:00	2	1.04	.30	:50	50	.81	0	:55	5	.77	.48	:07	2	.76	.30
:05	5	1.05	.12	:55	5	.82	.12	7:00	5	.80	.36	:10	3	.77	.20
6:25	80	1.05	0	9:00	5	.83	.12	:10	10	.81	.06	:16	6	.77	0
:30	5	1.06	.12	:05	5	.84	.12	:30	20	.81	0	:18	2	.78	.30
:35	5	1.07	.12	:10	5	.90	.72	:35	5	.82	.12	:30	12	.78	0
:40	5	1.08	.12	:15	5	.91	.12	:40	5	.82	0	:40	10	.79	.06
:45	5	1.10	.24	:20	5	.92	.12	:45	5	.83	.12				
STORM OF APR. 14-15, 1938				:25	5	.94	.24	:51	6	.83	0	STORM OF MAY 20, 1939			
Apr. 14				:30	5	.99	.60	:54	3	.85	.40	May 20			
p. m.				:35	5	1.04	.60	:55	1	.86	.60	a. m.			
11:50		0	0	:40	5	1.11	.84	8:00	5	.87	.12	12:35		0	0
:55	5	.05	.60	:45	5	1.18	.84	:30	30	.87	0	:38	3	.02	.40
:58	3	.18	2.60	:50	5	1.21	.36	:45	15	.89	.08	:40	2	.06	1.20
12:00	2	.22	1.20	:55	5	1.26	.60	1:00	60	.90	.01	:42	2	.09	.90
Apr. 15				10:00	5	1.28	.24					:45	3	.10	.20
a. m.				:05	5	1.31	.36	STORM OF MAY 17-18, 1939				:50	5	.13	.36
12:05	5	.26	.48	:10	5	1.35	.48	May 17				:55	5	.14	.12
:10	5	.31	.60	:15	5	1.39	.48	p. m.				1:00	5	.23	1.08
:15	5	.34	.36	:20	5	1.44	.60	6:45		0	0	:05	5	.33	1.20
:20	5	.36	.24	:25	5	1.46	.24	:15	15	.01	.04	:10	5	.47	1.68
:25	5	.37	.12	:30	5	1.48	.24	:20	5	.03	.12	:15	5	.49	.24
:45	20	.37	0	:35	5	1.57	1.08	:25	5	.04	.12	:16	1	.51	1.20
1:00	15	.38	.04	:40	5	1.61	.48	:30	5	.08	.48	:20	4	.62	1.65
:05	5	.42	.48	:45	5	1.62	.12	:35	5	.13	.60	:25	5	.67	.60
:10	5	.46	.48	11:00	15	1.62	0	:40	5	.17	.48	:30	5	.72	.60
:15	5	.50	.48	:15	15	1.66	.16	:45	5	.21	.24	:35	5	.76	.48
:20	5	.51	.12	:30	15	1.72	.24					:40	5	.80	.84
:22	2	.54	.90	:45	15	1.74	.08					:50	10	.82	.12
:25	3	.55	.20	12:00	15	1.74	0					2:00	10	.83	.06
				p. m.								:05	5	.85	.24
				12:30	30	1.76	.04								
				1:07 ¹	37	1.76	0								

¹ Clock stopped. Rainfall of 0.57 inch after 1:07 p. m. not recorded.

TABLE 67.—Rainfall at station 70a for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:25		0	0	7:45	5	0.95	0.12	9:10	10	0.29	0.36	12:40		0	0
:30	5	.03	.36	:50	5	.97	.24	:20	10	.35	.36	:45	5	.05	.60
:40	10	.04	.06	:55	5	.98	.12	:23	3	.36	.20	:50	5	.07	.24
:50	10	.05	.06	8:00	5	1.00	.24	:33	10	.36	0	:55	5	.10	.36
May 17				:35	35	1.00	0	:35	2	.37	.30	1:00	5	.14	.48
a. m.				:45	10	1.01	.06	:40	5	.38	.12	:05	5	.21	.84
6:23	633	.05	0									:10	5	.40	2.28
:25	2	.11	1.80	STORM OF MAY 17-18, 1939				May 18				:15	5	.47	.84
:30	5	.28	2.04	May 17				a. m.				:17	2	.48	.30
:35	5	.45	2.04	7:00				6:52	612	.38	0	:20	3	.55	1.40
:37	2	.60	4.50	:20	20	.02	.03	:54	2	.40	.60	:21	1	.59	2.40
:40	3	.67	1.40	:30	10	.05	.18	:55	1	.46	.36	:25	4	.64	.75
:43	3	.72	1.00	:40	10	.14	.54	:58	3	.66	4.00	:30	5	.69	.60
:45	2	.74	.60	:50	10	.18	.24	7:00	2	.67	.30	:40	10	.79	.60
:50	5	.81	.84	8:00	10	.23	.30	:05	5	.77	1.20	:45	5	.80	.12
:55	5	.86	.60					:10	5	.79	.24	:50	5	.81	.12
7:00	5	.89	.36					:15	5	.80	.12	:55	5	.83	.24
:10	10	.91	.12					:17	2	.81	.30	2:00	5	.84	.12
:20	10	.92	.06					:20	3	.82	.20	:05	5	.84	0
:30	10	.93	.06									:07	2	.86	.60
:40	10	.94	.06									:10	3	.87	.20

TABLE 68.—Rainfall at station 75 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
7:23-----		0	0	8:00-----	10	0.95	0.18	7:35-----	5	0.15	0.72	12:37-----		0	0
:25-----	2	.01	.30	:15-----	15	.95	0	:40-----	5	.19	.48	:40-----	3	.04	.80
:30-----	5	.03	.24	:30-----	15	.96	.04	:45-----	5	.20	.12	:41-----	1	.06	1.20
:35-----	5	.05	.24	:45-----	15	.97	.04	:50-----	5	.23	.36	:45-----	4	.08	.30
:40-----	5	.06	.12	11:00-----	135	.97	0	8:00-----	10	.28	.30	:50-----	5	.10	.24
				12:00-----	60	.98	.01	:10-----	10	.34	.36	:55-----	5	.11	.12
May 17								:20-----	10	.38	.24	:57-----	2	.12	.30
<i>a. m.</i>				<i>p. m.</i>				:30-----	10	.38	0	1:00-----	3	.18	1.20
6:21-----	641	.06	0	1:00-----	60	.98	T	:35-----	5	.40	.24	:05-----	5	.28	1.20
:23-----	2	.08	.60	2:00-----	60	.99	.01					:10-----	5	.41	1.56
:25-----	2	.13	1.50					May 18				:14-----	4	.44	.45
:30-----	5	.29	1.92	STORM OF MAY 17-18, 1939				<i>a. m.</i>				:15-----	1	.46	1.20
:35-----	5	.43	1.68	May 17				6:52-----	617	.40	0	:20-----	5	.60	1.68
:40-----	5	.60	2.04	<i>p. m.</i>				:54-----	2	.41	.30	:21-----	1	.62	1.20
:45-----	5	.73	1.56	6:45-----		0	0	:55-----	1	.45	2.40	:25-----	4	.65	.45
:50-----	5	.81	.96	:50-----	5	.02	.24	:56-----	1	.51	3.60	:30-----	5	.72	.84
:55-----	5	.84	.36	7:00-----	10	.02	0	:57-----	1	.59	4.80	:40-----	10	.81	.54
:56-----	1	.86	1.20	:10-----	10	.04	.12	:59-----	2	.66	2.10	:50-----	10	.84	.18
7:00-----	4	.87	.15	:20-----	10	.05	.06	7:00-----	1	.75	5.40	2:00-----	10	.87	.18
:05-----	5	.88	.12	:25-----	5	.06	.12	:01-----	1	.77	1.20	:05-----	5	.87	0
:19-----	14	.88	0	:27-----	2	.06	0	:03-----	2	.78	.30	:08-----	3	.89	.40
:20-----	1	.89	.60	:30-----	3	.09	.60	:05-----	2	.79	.30	3:00-----	52	.89	0
:30-----	10	.90	.06					:07-----	2	.81	.60	4:00-----	60	.90	.0
:40-----	10	.91	.06					:10-----	3	.82	.20				
:50-----	10	.92	.06					:16-----	6	.82	0				
								:20-----	4	.83	.15				

TABLE 69.—Rainfall at station 75a for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
7:22-----		0	0	7:45-----	5	0.97	0.12	7:28-----	3	0.06	0.20	12:38-----		0	0
:25-----	3	.01	.20	:50-----	5	.98	.12	:30-----	2	.08	.60	:40-----	2	.01	.30
:30-----	5	.05	.48	:55-----	5	.99	.12	:35-----	5	.13	.36	:42-----	2	.05	1.20
:40-----	10	.07	.12	8:00-----	5	1.00	.12	:38-----	3	.17	.80	:45-----	3	.06	.20
:50-----	10	.08	.06	10:00-----	120	1.00	0	:40-----	2	.18	.30	:50-----	5	.09	.36
May 17				11:00-----	60	1.01	.01	:50-----	10	.24	.36	:55-----	5	.11	.24
<i>a. m.</i>				12:00-----	60	1.02	.01	8:00-----	10	.29	.30	:58-----	3	.12	.20
6:23-----	633	.08	0					:10-----	10	.33	.24	1:00-----	2	.15	.90
:25-----	2	.12	1.20	<i>p. m.</i>				:20-----	10	.38	.30	:05-----	5	.23	.96
:30-----	2	.30	2.16	1:00-----	60	1.03	.01	:30-----	10	.39	.06	:10-----	5	.36	1.56
:32-----	2	.34	1.20					:35-----	5	.40	.12	:12-----	2	.40	1.20
:35-----	3	.50	3.20	STORM OF MAY 17-18, 1939				:40-----	5	.41	.12	:15-----	3	.42	.40
:37-----	2	.63	3.90	May 17				May 18				:20-----	5	.58	1.92
:40-----	5	.71	1.60	<i>p. m.</i>				<i>a. m.</i>				:30-----	10	.71	.78
:45-----	5	.76	.60	6:40-----		0	0	6:53-----	613	.41	0	:40-----	10	.81	.60
:50-----	5	.84	.96	:50-----	10	.01	.06	:55-----	2	.48	2.10	:50-----	10	.84	.18
:55-----	5	.88	.48	7:00-----	10	.02	.06	7:00-----	5	.78	3.60	:55-----	5	.87	.36
:56-----	1	.90	1.20	:10-----	10	.03	.06	:04-----	4	.79	.15	2:00-----	5	.88	.12
7:00-----	4	.92	.30	:20-----	10	.04	.06	:05-----	1	.81	1.20	:05-----	5	.88	0
:10-----	10	.93	.06	:25-----	5	.05	.12	:10-----	5	.82	.12	:07-----	2	.90	.60
:20-----	10	.93	0					:17-----	7	.82	0				
:30-----	10	.95	.12					:20-----	3	.83	.20				
:40-----	10	.96	.06												

TABLE 70.—Rainfall at station 76 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
7:25		0	0	5:00	10	0.90	0.06	7:50	10	0.22	0.30	12:37		0	0
30	5	.03	.36	8:00	10	.93	.18	8:00	10	.26	.24	3:40	3	.05	1.00
35	5	.04	.12	4:00	40	.93	0	10	10	.32	.36	43	3	.07	.40
40	5	.05	.12	4:5	5	.95	.24	20	10	.36	.24	45	2	.08	.30
45	5	.06	.12					30	10	.38	.12	50	5	.11	.36
								40	10	.39	.06	55	5	.12	.12
								50	10	.40	.06	1:00	5	.21	1.08
May 17				STORM OF MAY 17-18, 1939				May 18							
<i>a. m.</i>				<i>p. m.</i>				<i>a. m.</i>							
6:23	638	.06	0	6:40		0	0	6:51	601	.40	0				
25	2	.10	1.20	5:00	10	.01	.06	5:4	3	.44	.80				
30	5	.27	2.04	7:00	10	.02	.06	55	1	.48	2.40				
35	5	.45	2.16	10	10	.03	.06	58	3	.65	3.40				
36	1	.52	4.20	20	10	.04	.06	7:00	2	.66	.30				
40	4	.65	1.95	25	5	.05	.12	02	2	.67	.30				
50	10	.77	.54	30	5	.09	.48	05	3	.70	.60				
7:00	10	.86	.06	35	5	.14	.60	06	1	.72	1.20				
10	10	.87	0	40	5	.17	.36	10	4	.73	.15				
25	15	.87	.12					20	10	.74	.06				
30	5	.88	.06												
40	10	.89	.06												

TABLE 71.—Rainfall at station 82 for selected storms, 1938-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAR. 27, 1938				STORM OF MAR. 28, 1938—Con.				STORM OF APR. 14-15, 1938—Con.				STORM OF APR. 14-15, 1938—Con.			
Mar. 27				Mar. 28				Apr. 15				Apr. 15			
<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
12:08		0	0	6:20	55	1.00	0	8:40	150	0.72	0	2:55	2	1.85	0.30
10	2	.10	3.00	30	10	1.01	.06	45	5	.73	.12	3:00	5	1.89	.48
15	5	.15	.60	40	10	1.03	.12	50	5	.74	.12	05	5	1.93	.48
20	5	.16	.12	50	10	1.05	.12	55	5	.75	.12	10	5	1.97	.48
30	10	.16	0					9:00	5	.76	.12	15	5	2.01	.48
45	15	.17	.04					05	5	.77	.12	20	5	2.05	.48
1:00	15	.24	.28					08	3	.80	.60	25	5	2.08	.36
15	15	.27	.12	STORM OF APR. 14-15, 1938				10	2	.81	.30	30	5	2.12	.48
30	15	.28	.12	Apr. 14				15	5	.82	.12	35	5	2.14	.24
45	15	.29	.12	<i>p. m.</i>				20	5	.83	.12	40	5	2.18	.48
2:00	15	.30	.12	11:52		0	0	23	3	.84	.20	45	5	2.21	.36
3:00	60	.30	0	55	3	.08	1.60	25	2	.88	1.20	5:00	75	2.21	0
4:00	60	.31	.01	57	2	.14	1.80	30	5	.92	.48	05	5	2.22	.12
5:00	60	.32	.01	12:00	3	.18	.80	35	5	.99	.84	10	5	2.24	.24
6:40	100	.32	0					40	5	1.03	.48	15	5	2.26	.24
50	10	.34	.12	Apr. 15				45	5	1.06	.36	20	5	2.28	.24
7:00	10	.37	.18	<i>a. m.</i>				50	5	1.10	.48				
10	10	.40	.18	12:04	4	.23	.75	55	5	1.13	.36	STORM OF MAY 16-17, 1939			
20	10	.42	.12	05	1	.24	.60	10:00	5	1.15	.24	May 16			
30	10	.43	.06	10	5	.25	.12	05	5	1.17	.24	<i>p. m.</i>			
40	10	.45	.12	15	5	.26	.12	10	5	1.22	.60	7:23		0	0
50	10	.48	.18	20	5	.27	.12	15	5	1.28	.72	25	2	.02	.60
8:00	10	.49	.06	30	10	.28	.06	20	5	1.35	.84	28	3	.04	.40
10	10	.50	.06	40	10	.29	.06	25	5	1.37	.24	30	2	.05	.30
20	10	.52	.12	58	18	.29	0	30	5	1.40	.36	35	5	.06	.12
25	5	.56	.48	1:00	2	.30	.30	40	5	1.45	.60	40	5	.07	.12
30	5	.57	.12	05	5	.33	.36	45	5	1.51	.72	45	5	.08	.12
9:00	30	.57	0	10	5	.38	.60	50	5	1.52	.12	50	5	.09	.12
05	5	.58	.12	13	3	.43	1.00	55	5	1.53	.12	May 17			
10	5	.60	.24	15	2	.44	.30	1:00	10	1.53	0	<i>a. m.</i>			
15	5	.61	.12	20	5	.47	.36	05	5	1.56	.36	6:23	633	.09	0
				25	5	.49	.24	10	5	1.57	.12	25	2	.12	.90
STORM OF MAR. 28, 1938				30	5	.50	.12	15	5	1.58	.12	30	5	.29	2.04
Mar. 28				35	5	.51	.12	20	5	1.60	.24	32	2	.35	1.80
<i>p. m.</i>				40	5	.52	.12	25	5	1.62	.24	34	2	.45	3.00
3:43		0	0	45	5	.53	.12	30	5	1.64	.24	35	1	.52	4.20
45	2	.21	6.30	50	5	.55	.24	35	5	1.65	.12	36	1	.58	3.60
50	5	.62	4.92	55	5	.56	.12	40	5	1.66	.12	43	3	.74	1.20
55	5	.67	.60	6:00	60	.58	0	45	5	1.66	.12	45	2	.77	.90
4:00	5	.68	.12	05	5	.60	.24	50	5	1.68	.08	47	2	.81	1.20
10	10	.68	0	10	25	.60	0	55	5	1.70	.08	50	3	.85	.80
15	5	.75	.84	30	5	.66	.72	12:15	15	1.71	.04	55	5	.89	.48
20	5	.95	2.40	35	5	.68	.24	30	15	1.72	.04	57	2	.94	1.50
25	5	.98	.36	40	5	.69	.12	45	15	1.72	0	7:00	3	.96	.40
5:00	35	.98	0	45	5	.70	.12	50	5	1.75	.36	15	15	.97	.04
05	5	.99	.12	50	5	.71	.12	55	5	1.78	.36	20	5	.97	0
20	15	.99	0	6:00	130	.70	0	30	5	1.81	.36				
25	5	1.00	.12	05	5	.71	.12	35	5	1.84	.36				
				10	5	.72	.12	53	18	1.84	0				

TABLE 71.—Rainfall at station 82 for selected storms, 1938-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 17				May 17				May 18				May 20			
a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:25	5	0.99	0.24	7:25	5	0.06	0.12	6:53	3	0.43	0.20	12:50	5	0.08	0.24
:30	5	.99	0	:28	3	.07	.20	:55	2	.48	1.50	:55	5	.09	.12
:40	10	1.00	.06	:30	2	.10	.90	:56	1	.54	3.60	:57	2	.10	.30
:45	5	1.02	.24	:35	5	.15	.60	:57	1	.66	7.20	1:00	3	.15	1.00
:50	5	1.02	0	:37	2	.18	.90	7:00	3	.75	1.80	:03	3	.18	.60
:55	5	1.04	.24	:40	3	.20	.40	:03	3	.81	1.20	:05	2	.24	1.80
8:00	5	1.04	0	:45	5	.22	.24	:05	2	.83	.60	:10	5	.36	1.44
:30	30	1.05	.02	:50	5	.25	.36	:20	15	.83	0	:13	3	.40	.80
:45	15	1.06	.04	:55	5	.28	.36	:24	4	.84	.15	:15	2	.42	.60
STORM OF MAY 17-18, 1939				8:00	5	.31	.36	STORM OF MAY 20, 1939				:18	3	.51	1.80
May 17				:05	5	.33	.24	May 20				:20	2	.56	1.50
p. m.				:10	5	.35	.24	a. m.				:25	5	.62	.72
6:45		0	0	:15	5	.38	.36	12:38		0	0	:30	5	.68	.72
:50	5	.01	.12	:20	5	.40	.24	:40	2	.01	.30	:35	5	.75	.84
7:00	10	.02	.06	:30	10	.41	.06	:43	3	.05	.80	:40	5	.79	.48
:10	10	.03	.06	:40	10	.42	.06	:45	2	.06	.30	:45	5	.80	.12
:20	10	.05	.12	May 18				May 20				:50	5	.82	.24
				a. m.	610	.42	0	a. m.				:55	5	.85	.36
				6:50				12:38				2:00	5	.87	.24
								:40	2	.01	.30	:05	5	.87	0
								:43	3	.05	.80	:10	5	.88	.12
								:45	2	.06	.30	:20	10	.89	.12

TABLE 72.—Rainfall at station 83 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 16				May 17				May 17				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:25	2	.01	.30	7:55	5	1.03	0.12	8:20	10	0.36	0.30	12:43	3	0.03	0.60
:25	5	.03	.24	8:00	5	1.04	.12	:30	10	.37	.06	:45	2	.04	.30
:30	5	.05	.24	:30	30	1.04	0	:40	10	.38	.06	:50	5	.05	.12
:35	5	.06	.12	:45	15	1.05	.04	May 18				:55	5	.08	.36
:40	5	.06	.12	9:00	15	1.05	0	a. m.				:57	2	.09	.30
:45	5	.07	.12	10:00	60	1.06	.01	6:51	611	.38	0	1:00	3	.11	.40
May 17				11:00	60	1.07	.01	:53	2	.40	.60	:01	1	.12	.60
a. m.				STORM OF MAY 17-18, 1939				:55	2	.50	3.00	:05	4	.21	1.35
6:23	638	.07	0	May 17				:58	3	.64	2.80	:06	1	.24	1.80
:25	2	.10	.90	p. m.				7:00	2	.67	.90	:08	2	.33	2.70
:30	5	.29	2.28	6:45	15	.01	.04	:02	2	.68	.30	:10	2	.39	1.80
:35	5	.50	2.52	:20	15	.03	.08	:03	1	.74	3.60	:12	2	.45	1.80
:38	3	.66	3.20	:25	5	.04	.12	:05	2	.76	.60	:14	2	.48	.90
:40	2	.72	1.80	:27	2	.05	.30	:06	1	.82	3.60	:15	1	.48	T
:45	5	.78	.72	:30	3	.07	.40	:10	4	.82	T	:16	1	.49	.60
:48	3	.82	.80	:35	5	.12	.60	:15	5	.83	.12	:17	1	.52	1.80
:50	2	.85	.90	:40	5	.18	.72	:30	15	.85	.08	:20	3	.62	2.00
:55	5	.90	.60	:45	5	.20	.24	STORM OF MAY 20, 1939				:25	5	.70	.96
7:00	5	.95	.60	:50	5	.22	.24	May 20				:30	5	.75	.60
:10	10	.96	.06	:55	5	.25	.30	a. m.				:35	5	.81	.72
:20	10	.97	.06	:58	5	.27	.30	12:40		0	0	:40	5	.86	.60
:25	5	.99	.24	:59	5	.28	.30	STORM OF MAY 20, 1939				:45	5	.88	.24
:30	5	.99	T	:59	5	.29	.30	May 20				:50	5	.89	.12
:35	5	1.00	.12	:59	5	.30	.30	a. m.				:55	5	.90	.12
:40	5	1.00	0	:59	5	.31	.30	12:40				2:00	5	.94	.48
:45	5	1.01	.12	:59	5	.32	.30	STORM OF MAY 20, 1939				:04	4	.94	0
:50	5	1.02	.12	:59	5	.33	.30	May 20				:05	1	.95	.60
				:59	5	.34	.30	a. m.				:10	5	.97	.24
				:59	5	.35	.30	12:40							

TABLE 73.—Rainfall at station 84a for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939				STORM OF MAY 17-18, 1939—Con.			
May 16				May 17				May 17				May 18			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
7:25-----		0	0	6:50-----	2	0.82	0.30	6:45-----		0	0	6:55-----	618	0.40	0
:30-----	5	.03	.36	:55-----	5	.86	.48	7:00-----	15	.01	.04	:55-----	2	.43	0.9
:35-----	5	.04	.12	:57-----	2	.88	.60	:15-----	15	.02	.04	:59-----	4	.68	3.75
				7:00-----	3	.89	.20	:20-----	5	.03	.12	7:00-----	1	.69	.60
				:05-----	5	.90	.12	:25-----	5	.04	.12	:05-----	5	.78	1.08
May 17				:20-----	15	.90	0	:30-----	3	.05	.20	:07-----	2	.83	1.50
<i>a. m.</i>				:30-----	10	.92	.12	:35-----	5	.12	.60	:10-----	3	.84	.20
6:22-----	647	.04	0	:40-----	10	.92	0	:37-----	2	.15	.90	:17-----	7	.84	0
:25-----	3	.13	1.80	:45-----	5	.94	.24	:40-----	3	.16	.20	:20-----	3	.85	.20
:30-----	5	.32	2.28	:52-----	7	.94	0	:45-----	5	.18	.24	30-----	10	.85	0
:35-----	5	.53	2.52	:55-----	3	.96	.40	8:00-----	15	.29	.44	:45-----	15	.86	.04
:38-----	3	.66	2.60	8:00-----	5	.97	.12	:15-----	15	.36	.28	11:00-----	195	.86	0
:40-----	2	.70	1.20	:35-----	35	.97	0	:20-----	5	.38	.24	12:00-----	60	.87	.01
:45-----	5	.75	.60	:40-----	5	.98	.12	:25-----	5	.38	0	<i>p. m.</i>			
:48-----	3	.81	1.20					:30-----	5	.39	.12	1:00-----	60	.88	.01
								:35-----	5	.40	.12				
												STORM OF MAY 20, 1939			
												[Record lost because of instrument failure].			

TABLE 74.—Rainfall at station 85 for selected storms, 1937-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 21-22, 1937				STORM OF DEC. 21-22, 1937—Con.				STORM OF JAN. 23, 1938—Con.				STORM OF FEB. 16, 1938—Con.			
Dec. 21				Dec. 22				Jan. 23				Feb. 16			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
5:48-----		0	0	1:00-----	10	1.13	0.18	7:30-----	15	1.57	0.04	1:40-----	10	0.14	0.06
:50-----	2	.01	.30	:15-----	15	1.17	.16	:45-----	15	1.59	.08	:50-----	10	.15	.06
:55-----	5	.02	.12	:30-----	15	1.22	.20	8:00-----	15	1.66	.28	:55-----	5	.24	1.08
8:00-----	125	.02	0	:45-----	15	1.25	.12	:15-----	15	1.71	.20	2:00-----	5	.33	1.08
:05-----	5	.03	.12	2:00-----	15	1.29	.16	:30-----	15	1.77	.24	:05-----	5	.41	.96
:08-----	3	.05	.40	:35-----	35	1.29	0	:45-----	15	1.82	.20	:10-----	5	.52	1.32
:10-----	2	.06	.30	:40-----	5	1.32	.36	9:00-----	15	1.87	.20	:15-----	5	.67	1.80
10:00-----	110	.06	0	:50-----	10	1.33	.06	:15-----	15	1.90	.12	:20-----	5	.81	1.68
11:00-----	60	.07	.01	3:00-----	10	1.34	.06	:30-----	15	1.95	.20	:25-----	5	1.06	3.00
12:00-----	60	.08	.01	4:55-----	115	1.34	0	:45-----	15	1.98	.12	:30-----	5	1.30	2.88
				5:00-----	5	1.35	.12	10:00-----	15	2.00	.08	:33-----	3	1.43	2.60
Dec. 22				:10-----	10	1.36	.06	:15-----	15	2.03	.12	:35-----	2	1.44	.30
<i>a. m.</i>				:20-----	10	1.37	.06	:30-----	15	2.05	.08	:40-----	5	1.45	.12
2:00-----	120	.08	0	:30-----	10	1.40	.18	:45-----	15	2.07	.08	:45-----	5	1.46	.12
:15-----	15	.10	.08	:40-----	10	1.41	.06	11:00-----	15	2.08	.04	3:00-----	15	1.48	.08
:30-----	15	.11	.04	:50-----	10	1.42	.06	:15-----	15	2.09	.04	:15-----	15	1.52	.16
:45-----	15	.15	.16	6:00-----	10	1.43	.06	:30-----	15	2.10	.04	:30-----	15	1.59	.28
3:00-----	15	.16	.04	:10-----	10	1.44	.06	:45-----	15	2.13	.12	:45-----	15	1.65	.24
:15-----	15	.19	.12	STORM OF JAN. 23, 1938				12:00-----	15	2.14	.04	4:00-----	15	1.71	.24
:30-----	15	.22	.12	Jan. 23				<i>p. m.</i>				:15-----	15	1.74	.12
:45-----	15	.24	.08	<i>a. m.</i>				12:30-----	30	2.15	.02	:30-----	15	1.74	T
4:00-----	15	.31	.28	12:25-----		0	0	1:00-----	30	2.17	.04	:45-----	15	1.75	.04
:15-----	15	.38	.28	:30-----	5	.04	.48	:30-----	30	2.18	.02	5:00-----	15	1.76	.04
:30-----	15	.48	.40	:45-----	15	.04	0	4:00-----	10	2.32	.12				
:45-----	15	.52	.16	1:00-----	15	.08	.16	:50-----	10	2.35	.18	STORM OF MAR. 27, 1938			
5:00-----	15	.54	.08	:15-----	15	.16	.32	4:00-----	10	2.36	.06	Mar. 27			
6:15-----	75	.54	0	:30-----	15	.22	.24	:30-----	30	2.36	0	<i>a. m.</i>			
:20-----	5	.56	.24	:45-----	15	.24	.08	:45-----	15	2.40	.16	12:04-----		0	0
:30-----	10	.58	.12	2:00-----	15	.34	.40	5:00-----	15	2.42	.08	:05-----	1	.01	.60
:40-----	10	.59	.06	:15-----	15	.45	.44					:10-----	5	.11	1.20
:50-----	10	.60	.06	:30-----	15	.51	.24	STORM OF FEB. 16, 1938				:15-----	5	.13	.24
7:00-----	10	.63	.18	:45-----	15	.56	.20	Feb. 16				:20-----	5	.14	.12
:15-----	15	.65	.08	3:00-----	15	.68	.48	<i>a. m.</i>				:35-----	15	.14	0
:30-----	15	.67	.08	:15-----	15	.78	.40	10:30-----				:40-----	5	.18	.48
:45-----	15	.68	.04	:30-----	15	.85	.28	:40-----	10	2.32	.12	:45-----	5	.23	.60
9:00-----	75	.68	0	:45-----	15	.90	.20	:50-----	10	2.35	.18	1:00-----	15	.29	.24
:15-----	15	.70	.08	4:00-----	15	.98	.32	4:00-----	10	2.36	.06	:15-----	15	.33	.16
:30-----	15	.74	.16	:15-----	15	1.03	.20	:30-----	30	2.36	0	:30-----	15	.34	.04
:45-----	15	.78	.16	:30-----	15	1.11	.32	:45-----	15	2.40	.16	:45-----	15	.35	.04
10:00-----	15	.82	.16	:45-----	15	1.19	.32	5:00-----	15	2.42	.08	3:15-----	90	.35	0
:15-----	15	.84	.08	:15-----	15	1.23	.16					:30-----	15	.36	.04
:25-----	10	.84	0	:30-----	15	1.27	.16	<i>p. m.</i>				4:00-----	30	.36	0
:30-----	5	.86	.24	:45-----	15	1.32	.20	12:17-----	17	.05	0	:10-----	10	.40	.24
:32-----	2	.88	.60	:15-----	15	1.35	.12	:20-----	3	.08	.60	6:30-----	140	.40	0
:35-----	3	.90	.40	:30-----	15	1.40	.20	:25-----	5	.10	.24	:45-----	15	.42	.08
:40-----	5	.91	.12	:45-----	15	1.46	.24	:30-----	5	.11	.12	7:00-----	15	.47	.20
				7:00-----	15	1.52	.08	:45-----	15	.12	.04	:15-----	15	.51	.16
				:15-----	15	1.53	.04	1:00-----	15	.13	.04	:30-----	15	.53	.08
				:30-----	15	1.56	.12	:30-----	30	.13	0	:45-----	15	.56	.12
												8:00-----	15	.57	.04
												:15-----	15	.61	.16
												:20-----	5	.63	.24

TABLE 74.—Rainfall at station 85 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAR. 27, 1938—Con.				STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939				STORM OF MAY 17-18, 1939—Con.			
Mar. 27				Apr. 15				May 16				May 18			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
8:25	5	0.68	0.60	1:30	15	0.39	0.44	7:26		0	0	6:55	618	0.36	0
9:00	35	.68	0	1:45	15	.42	.12	7:30	4	.03	.45	6:56	1	.39	1.80
10:05	5	.81	1.56	2:00	15	.45	.12	7:40	10	.05	.12	6:58	2	.45	1.80
11:10	5	.86	.60	3:02	62	.45	0	7:50	10	.06	.06	7:00	2	.60	4.50
10:32	82	.86	0	3:05	3	.47	.40					7:02	2	.68	2.40
11:34	2	.90	1.20	3:30	25	.47	0	May 17				7:05	3	.78	2.00
STORM OF MAR. 28, 1938				3:33	3	.48	.20	a. m.				7:08	3	.85	1.40
Mar. 28				3:35	2	.53	1.50	6:25	635	.06	0	7:09	1	.87	1.20
p. m.				3:40	5	.56	.36	6:30	5	.24	2.16	7:10	1	.89	1.20
3:47		0	0	3:45	5	.58	.24	6:35	5	.46	2.64	7:15	5	.91	.24
3:50	3	.42	8.60	3:50	5	.59	.12	6:40	5	.72	3.12	7:18	3	.91	T
3:55	5	.55	1.44	3:55	5	.59	0	6:45	1	.76	2.40	7:20	2	.94	.90
4:00	5	.56	.12	4:00	130	.60	.01	6:48	3	.82	1.20	7:25	5	.95	.12
4:05	5	.56	T	4:05	60	.60	0	6:50	1	.83	.60	7:30	15	.95	0
4:10	5	.57	.12	4:10	105	.65	.20	6:55	5	.87	.48	7:35	5	.96	.12
4:15	5	.57	.36	4:15	15	.71	.24	7:00	2	.90	.90				
4:20	2	.61	.30	4:20	15	.80	.36	7:05	3	.93	.60	STORM OF MAY 20, 1939			
4:25	3	.72	2.20	4:25	15	.96	.64	7:10	5	.98	.60	May 20			
4:30	5	.84	1.44	4:30	10	1.06	.24	7:15	1	.99	.30	a. m.			
4:35	5	.83	.12	4:35	10	1.10	.24	7:20	4	1.01	.80	12:40		0	0
4:40	5	.85	.02	4:40	10	1.25	.90	7:25	5	1.01	T	12:41	2	.04	1.20
4:45	72	.87	0	4:45	10	1.34	.54	7:30	10	1.02	.06	12:42	3	.05	.20
4:50	3	.88	.20	4:50	10	1.45	.66	7:35	15	1.03	.06	12:43	5	.07	.24
5:00	5	.92	.48	4:55	10	1.46	.06	7:40	15	1.04	.04	12:44	5	.09	.24
STORM OF APR. 14-15, 1938				5:00	10	1.47	.06	7:45	25	1.07	.12	12:45	5	.12	.36
Apr. 14				5:05	15	1.54	.28	7:50	15	1.08	.04	12:46	3	.15	.60
p. m.				5:10	15	1.58	.16	7:55	15	1.09	.04	12:47	1	.18	1.80
11:30		0	0	5:15	15	1.60	.08					12:48	1	.23	3.00
11:45	15	.01	.04	5:20	15	1.61	.04	STORM OF MAY 17-18, 1939				12:49	4	.42	2.85
12:00	15	.03	.08	5:25	2	1.65	.30	May 17				12:50	1	.45	1.80
Apr. 15				5:30	5	1.66	.12	p. m.				12:51	2	.51	1.80
a. m.				5:35	15	1.70	.16	6:50		0	0	12:52	3	.53	.40
12:05	5	.09	.72	5:40	15	1.72	.08	7:00	10	.01	.06	12:53	4	.54	.60
12:10	5	.12	.36	5:45	10	1.72	0	7:05	10	.02	.06	12:54	5	.71	1.50
12:15	5	.13	.12	5:50	5	1.87	1.80	7:10	10	.03	.06	12:55	5	.77	.72
12:20	15	.15	.08	5:55	5	1.92	.60	7:15	10	.04	.06	12:56	5	.82	.60
12:25	15	.15	T	6:00	5	1.94	.24	7:20	10	.05	.12	12:57	5	.85	.36
12:30	15	.16	.04	6:05	5	1.99	.60	7:25	10	.06	.12	12:58	5	.88	.36
12:35	15	.16	.04	6:10	15	2.01	.08	7:30	10	.07	.12	12:59	5	.89	.12
12:40	15	.16	.04	6:15	15	2.07	.24	7:35	10	.08	.12	13:00	5	.92	.36
12:45	15	.16	.04	6:20	15	2.09	.08	7:40	10	.09	.12	13:01	5	.93	.12
12:50	15	.16	.04	6:25	60	2.09	0	7:45	10	.10	.12	13:02	5	.94	.12
12:55	15	.16	.04	6:30	10	2.13	.24	7:50	10	.11	.12	13:03	5	.95	1.20
13:00	15	.16	.04	6:35	10	2.17	.24	7:55	10	.12	.12	13:04	5	.96	.60
13:05	15	.16	.04	6:40	10	2.18	.06	8:00	10	.13	.12	13:05	54	.96	0
13:10	15	.16	.04	6:45	10	2.18	.06	8:05	10	.14	.12	13:06	60	.97	.01
13:15	15	.16	.04	6:50	10	2.18	.06	8:10	10	.15	.12				
13:20	15	.16	.04	6:55	10	2.18	.06	8:15	10	.16	.12				
13:25	15	.16	.04	7:00	10	2.18	.06	8:20	10	.17	.12				
13:30	15	.16	.04	7:05	10	2.18	.06	8:25	10	.18	.12				
13:35	15	.16	.04	7:10	10	2.18	.06	8:30	10	.19	.12				
13:40	15	.16	.04	7:15	10	2.18	.06	8:35	10	.20	.12				
13:45	15	.16	.04	7:20	10	2.18	.06	8:40	10	.21	.12				
13:50	15	.16	.04	7:25	10	2.18	.06	8:45	10	.22	.12				
13:55	15	.16	.04	7:30	10	2.18	.06	8:50	10	.23	.12				
14:00	15	.16	.04	7:35	10	2.18	.06	8:55	10	.24	.12				
14:05	15	.16	.04	7:40	10	2.18	.06	9:00	10	.25	.12				
14:10	15	.16	.04	7:45	10	2.18	.06								
14:15	15	.16	.04	7:50	10	2.18	.06								
14:20	15	.16	.04	7:55	10	2.18	.06								
14:25	15	.16	.04	8:00	10	2.18	.06								
14:30	15	.16	.04	8:05	10	2.18	.06								
14:35	15	.16	.04	8:10	10	2.18	.06								
14:40	15	.16	.04	8:15	10	2.18	.06								
14:45	15	.16	.04	8:20	10	2.18	.06								
14:50	15	.16	.04	8:25	10	2.18	.06								
14:55	15	.16	.04	8:30	10	2.18	.06								
15:00	15	.16	.04	8:35	10	2.18	.06								
15:05	15	.16	.04	8:40	10	2.18	.06								
15:10	15	.16	.04	8:45	10	2.18	.06								
15:15	15	.16	.04	8:50	10	2.18	.06								
15:20	15	.16	.04	8:55	10	2.18	.06								
15:25	15	.16	.04	9:00	10	2.18	.06								
15:30	15	.16	.04	9:05	10	2.18	.06								
15:35	15	.16	.04	9:10	10	2.18	.06								
15:40	15	.16	.04	9:15	10	2.18	.06								
15:45	15	.16	.04	9:20	10	2.18	.06								
15:50	15	.16	.04	9:25	10	2.18	.06								
15:55	15	.16	.04	9:30	10	2.18	.06								
16:00	15	.16	.04	9:35	10	2.18	.06								
16:05	15	.16	.04	9:40	10	2.18	.06								
16:10	15	.16	.04	9:45	10	2.18	.06								
16:15	15	.16	.04	9:50	10	2.18	.06								
16:20	15	.16	.04	9:55	10	2.18	.06								
16:25	15	.16	.04	10:00	10	2.18	.06								
16:30	15	.16	.04	10:05	10	2.18	.06								
16:35	15	.16	.04	10:10	10	2.18	.06								
16:40	15	.16	.04	10:15	10	2.18	.06								
16:45	15	.16	.04	10:20	10	2.18	.06								
16:50	15	.16	.04	10:25	10	2.18	.06								
16:55	15	.16	.04	10:30	10	2.18	.06								
17:00	15	.16	.04	10:35	10	2.18	.06								
17:05	15	.16	.04	10:40	10	2.18	.06								
17:10	15	.16	.04	10:45	10	2.18	.06								
17:15	15	.16	.04	10:50	10	2.18	.06								
17:20	15	.16	.04	10:55	10	2.18	.06								
17:25	15	.16	.04	11:00	10	2.18	.06								
17:30	15	.16	.04	11:05	10	2.18	.06								
17:35	15	.16	.04	11:10	10	2.18	.06								
17:40	15	.16	.04	11:15	10	2.18	.06								
17:45	15	.16	.04	11:20	10	2.18	.06								
17:50	15	.16	.04	11:25	10	2.18	.06								
17:55	15	.16	.04	11:30	10	2.18	.06								

TABLE 76.—Record of rainfall at station 94 for selected storms, 1937–39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 21-22, 1937				STORM OF JAN. 23, 1938—Con.				STORM OF FEB. 16, 1938—Con.				STORM OF APR. 14-15, 1938—Con.			
Dec. 21				Jan. 23				Feb. 16				Apr. 15			
<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>p. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>	<i>a. m.</i>	<i>Min.</i>	<i>In.</i>	<i>In. per hr.</i>
1:30		0	0	2:20	10	0.33	0.18	3:00	15	1.18	0.12	1:15	15	0.35	0.36
:40	10	.01	.06	:30	10	.37	.24	:15	15	1.22	.16	:30	15	.48	.52
:50	10	.02	.06	:40	10	.43	.36	:30	15	1.30	.32	:45	15	.50	.08
7:30	350	.02	0	:50	10	.47	.24	:45	15	1.36	.24	2:00	15	.53	.12
8:00	30	.05	.06	:52	2	.51	1.20	4:00	15	1.41	.20	:58	58	.53	0
:30	30	.06	.02	:55	3	.53	.40	:15	15	1.43	.08	3:00	2	.54	.30
10:00	90	.06	0	:58	3	.58	1.00					:25	25	.54	0
11:00	60	.07	.01	3:00	2	.59	.30	STORM OF MAR. 27, 1938				:30	5	.55	.12
12:00	60	.08	.01	:15	15	.66	.28	Mar. 27				:40	10	.66	.66
				:30	15	.71	.20	<i>a. m.</i>				:50	10	.67	.06
Dec. 22				:45	15	.74	.12	12:08		0	0	5:00	70	.67	0
<i>a. m.</i>				4:00	15	.80	.24	:10	2	.01	.30	6:00	60	.68	.01
1:00	60	.08	T	:15	15	.85	.20	:15	5	.08	.84	7:00	60	.69	.01
2:00	60	.09	.01	:30	15	.92	.28	:20	5	.09	.12	8:00	60	.70	.01
:15	15	.10	.04	:45	15	.99	.28	:35	15	.09	0	:40	40	.70	0
:30	15	.15	.20	5:00	15	1.05	.24	:40	5	.11	.24	:50	10	.74	.24
:45	15	.18	.12	:15	15	1.09	.16	:45	5	.15	.48	9:00	10	.75	.06
3:00	15	.19	.04	:30	15	1.14	.20	:50	5	.17	.24	:10	10	.79	.24
:15	15	.23	.16	:45	15	1.18	.16	:55	5	.22	.60	:20	10	.83	.24
:30	15	.25	.08	6:00	15	1.24	.24	1:00	5	.24	.24	:25	5	.86	.36
:45	15	.29	.16	:15	15	1.28	.16	:15	15	.27	.12	:28	3	.89	.60
4:00	15	.38	.36	:30	15	1.38	.40	:30	15	.30	.12	:30	2	.97	2.40
:15	15	.45	.28	:45	15	1.43	.20	:45	15	.31	.04	:45	15	1.11	.56
:20	5	.48	.36	7:00	15	1.47	.16	5:30	85	.34	0	10:00	15	1.18	.28
:22	2	.50	.60	:15	15	1.49	.08	:40	40	.35	0	:05	5	1.20	.24
:25	3	.50	T	:30	15	1.50	.04	:45	15	.36	.12	:10	5	1.25	.60
:30	5	.52	.24	:45	15	1.51	.04	6:00	30	.35	.02	:15	5	1.39	1.68
5:00	30	.54	.04	8:00	15	1.58	.28	:40	40	.35	0	:20	5	1.46	.84
:30	30	.55	.02	:15	15	1.64	.24	:45	15	.36	.12	:25	5	1.47	.12
6:10	40	.55	0	:30	15	1.71	.28	7:00	15	.40	.16	:28	3	1.48	.20
:20	10	.57	.12	:45	15	1.81	.40	:15	15	.44	.16	:30	2	1.56	2.40
:30	10	.58	.06	9:00	15	1.93	.48	:30	15	.46	.08	:35	5	1.63	.84
:45	15	.62	.16	:15	15	1.98	.20	:45	15	.51	.20	:40	5	1.65	.24
7:00	15	.64	.08	:30	15	2.02	.16	8:00	15	.52	.04	:45	5	1.66	.12
:15	15	.67	.12	:45	15	2.04	.08	:15	15	.54	.08	11:00	15	1.68	.08
:30	15	.68	.04	10:10	25	2.04	0	:25	5	.57	.36	:15	15	1.75	.28
8:55	85	.68	T	:20	10	2.06	.12	:30	15	.58	.40	:30	15	1.77	.08
9:00	5	.69	.12	11:25	65	2.06	0	:45	15	.62	.60	:45	15	1.78	.04
:15	15	.73	.16	:30	5	2.09	.36	9:02	32	.63	0	12:00	15	1.80	.08
:30	15	.78	.20	:45	15	2.10	.04	:05	3	.70	1.40	<i>p. m.</i>			
:45	15	.82	.16	12:00	15	2.12	.08	:10	5	.93	2.76	12:15	15	1.82	.08
10:00	15	.86	.16	<i>p. m.</i>				:15	5	.96	.36	:30	15	1.83	.04
:30	30	.88	.04	1:00	60	2.14	.02	:25	5	.62	.60	1:00	30	1.84	.02
11:00	30	.89	.02	2:00	60	2.15	.01	:30	5	.63	.12	:30	30	1.85	.02
:30	30	.90	.02	3:20	80	2.15	0	:45	15	.64	.12	2:00	30	1.87	.04
12:00	30	.91	.02	:25	5	2.24	1.08	4:00	4	.58	.15	:14	14	1.87	0
				:30	5	2.27	.36	:10	10	.59	.06	:15	1	1.89	1.20
Dec. 21				:45	15	2.31	.16	:20	10	.64	.30	:30	15	1.91	.08
12:15	15	.97	.24	4:00	15	2.34	.12	:25	5	.93	3.48	:45	15	1.93	.08
:30	15	1.04	.28	:30	30	2.34	0	:30	5	.94	.12	3:00	15	1.96	.12
:45	15	1.10	.24	:45	15	2.36	.08	5:25	55	.94	0	:05	5	1.99	.36
1:00	15	1.13	.12	5:00	15	2.38	.08	:30	5	.95	.12	:10	5	2.01	.24
:15	15	1.18	.20	:40	40	2.38	0	6:43	73	.95	0	:12	2	2.04	.90
:30	15	1.23	.20	:41	1	2.41	1.80	:45	2	.97	.60	:15	3	2.04	T
:45	15	1.26	.12	STORM OF FEB. 16, 1938				:47	2	.99	.60	:20	5	2.05	.12
2:00	15	1.28	.08	Feb. 16				:50	3	1.00	.20	:30	10	2.06	.06
:25	25	1.28	0	<i>a. m.</i>								:40	10	2.07	.06
:30	5	1.29	.12	10:30		0	0	STORM OF APR. 14-15, 1938				:45	5	2.14	.84
:45	15	1.31	.08	:40	10	.01	.06	Apr. 14				:46	1	2.15	.60
3:00	15	1.32	.04	:41	11	.17	0	<i>p. m.</i>				:50	4	2.16	.15
4:50	110	1.32	0	:45	4	.27	1.50	11:50		0	0	5:08	78	2.16	0
:55	5	1.33	.12	:50	5	.42	1.80	:55	5	.01	.12	:10	2	2.17	.30
5:00	5	1.34	.12	:55	5	.62	2.40	12:00	5	.03	.24	:15	5	2.23	.72
:15	15	1.36	.08	2:00	5	.66	.48	Apr. 15				:20	5	2.24	.12
:30	15	1.39	.12	:05	5	.80	1.68	12:05	5	.07	.48	<i>p. m.</i>			
:45	15	1.40	.04	:10	5	.85	.6	:10	5	.20	1.56	May 16			
6:00	15	1.42	.08	:15	5	.86	.12	:14	4	.21	.15	<i>p. m.</i>			
				:20	5	.95	1.08	:15	1	.23	1.20	7:10		0	0
STORM OF JAN. 23, 1938				:23	3	.99	.80	:20	5	.25	.24	:20	10	.06	.30
Jan. 23				:25	2	1.04	1.50	:25	5	.26	.12	:30	10	.07	.12
<i>a. m.</i>				:27	2	1.05	.30	:30	5	.26	0	:40	10	.08	.06
12:31		0	0	:45	15	1.15	.12	1:00	35	.26	0	:50	10	.09	.06
:35	4	.02	.30	STORM OF FEB. 16, 1938				STORM OF APR. 14-15, 1938				STORM OF MAY 16-17, 1939			
:40	5	.03	.12	Feb. 16				Apr. 14				May 16			
:52	12	.03	0	<i>a. m.</i>				<i>p. m.</i>				<i>p. m.</i>			
:55	3	.05	.40	10:30		0	0	11:50		0	0	7:10		0	0
:00	5	.06	.12	:40	10	.01	.06	:55	5	.01	.12	:20	10	.06	.30
:10	10	.09	.18	:41	11	.17	0	12:00	5	.03	.24	:30	10	.07	.12
:20	10	.12	.18	:45	4	.27	1.50	Apr. 15				:40	10	.08	.06
:30	10	.13	.06	:50	5	.42	1.80	<i>a. m.</i>				:50	10	.09	.06
:44	14	.13	0	:55	5	.62	2.40	12:05	5	.07	.48	<i>p. m.</i>			
:45	1	.14	.60	2:00	5	.66	.48	:10	5	.20	1.56	May 17			

TABLE 76.—Record of rainfall at station 94 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 17				May 17				May 18				May 20			
a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
7:30	10	1.19	0.06	7:50	10	0.16	0.30	7:15	5	0.92	0	12:59	4	0.32	1.25
:40	10	1.19	0	8:00	10	.19	.18	:20	5	1.09	2.04	1:00	1	.33	.60
:50	10	1.21	.12	:10	10	.23	.24	:30	10	1.11	.12	:05	5	.45	1.44
8:00	10	1.23	.12	:20	10	.26	.18					:10	5	.57	1.44
:30	30	1.23	0	:25	5	.27	.12	STORM OF MAY 20, 1939				:15	5	.67	1.20
:45	15	1.24	.04	:30	5	.31	.48					:20	5	.72	.60
10:00	75	1.24	0	:35	5	.36	.60					:25	5	.77	.60
11:00	60	1.25	.01	11:00	145	.36	0					:30	5	.83	.72
STORM OF MAY 17-18, 1939				12:00	60	.37	.01					:35	5	.87	.48
May 17				May 18				May 20				:40	5	.90	.36
p. m.				a. m.				12:34		0	0	:45	5	.91	.12
7:20		0	0	6:55	415	.37	0	:35	1	.01	.60	:50	5	.92	.12
:30	10	.05	.30	7:00	5	.56	2.28	:40	5	.03	.24	:55	5	.96	.48
:40	10	.11	.36	:05	5	.80	2.88	:45	5	.06	.36	2:00	5	.98	.24
				:30	3	.90	2.00	:48	3	.07	.20	:03	3	0	0
				:10	2	.92	.60	:50	2	.11	1.20	:05	2	1.01	.90
								:55	5	.21	1.20	:06	1	1.02	.60

TABLE 77.—Rainfall at station 107 for selected storms, 1937-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 21-22, 1937				STORM OF DEC. 21-22, 1937—Con.				STORM OF JAN. 23, 1938—Con.				STORM OF FEB. 16, 1938			
Dec. 21				Dec. 22				Jan. 23				Feb. 16			
p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
1:30		0	0	1:30	15	1.26	0.12	4:00	10	0.90	0.18	10:20		0	0
:45	15	.03	.12	:45	15	1.30	.16	:10	10	.93	.18	:25	5	.02	.24
2:00	15	.03	0	2:00	15	1.31	.04	:20	10	.97	.24	:40	15	.03	.04
:15	15	.04	.04	:30	30	1.32	.02	:30	10	1.01	.24	11:00	20	.03	0
6:30	255	.04	0	3:00	30	1.34	.04	:40	10	1.07	.36	:20	20	.04	.03
:30	30	.05	.02	4:00	60	1.34	T	:50	10	1.11	.24	:25	5	.05	.12
:45	30	.06	.02	:30	30	1.35	.02	5:00	10	1.13	.12	:30	5	.06	.12
7:00	15	.06	0	:50	20	1.35	0	:30	30	1.22	.18	:50	20	.07	.03
:45	15	.09	.12	5:00	10	1.36	.06	6:00	30	1.31	.18	:56	6	.07	0
8:00	15	.09	.12	:10	10	1.37	.06	:10	10	1.36	.30	:58	2	.08	.30
:15	15	.10	.04	:20	10	1.39	.12	:15	5	1.40	.45	12:00	2	.08	0
10:56	161	.10	0	:30	10	1.41	.12	:20	5	1.42	.24				
11:00	4	.11	.15	:40	10	1.42	.06	:25	5	1.43	.12	p. m.			
12:00	60	.13	.02	:50	10	1.43	.06	:30	5	1.45	.24	12:15	15	.09	.04
Dec. 22				6:00	10	1.45	.12	:40	10	1.49	.24	:20	5	.11	.24
a. m.				STORM OF JAN. 23, 1938				:50	10	1.50	.06	:50	30	.12	.02
1:00	60	.14	.01	Jan. 23				7:00	10	1.52	.12	1:15	25	.12	0
2:00	60	.14	0	a. m.				:30	30	1.55	.06	:20	5	.13	.12
:15	15	.16	.08	12:20		0	0	:40	10	1.56	.06	:37	17	.13	0
:30	15	.20	.16	:22	2	.05	1.50	:45	5	1.60	.48	:39	2	.16	.90
:45	15	.22	.08	:25	3	.06	.20	8:00	15	1.67	.28	:40	1	.21	3.00
3:00	15	.24	.08	:40	15	.08	.24	:10	10	1.73	.36	:42	2	.25	1.20
:15	15	.29	.20	:45	5	.08	.24	:20	10	1.78	.30	:44	2	.32	2.10
:30	15	.31	.08	:50	5	.10	.24	:30	10	1.85	.42	:45	1	.33	.60
:45	15	.35	.16	1:00	10	.11	.06	:40	10	1.96	.66	:46	1	.36	1.80
4:00	15	.42	.28	:05	5	.12	.12	:43	3	2.00	.80	:47	1	.43	4.20
:15	15	.51	.36	:07	2	.17	1.50	:45	2	2.01	.30	:50	3	.53	2.00
:30	15	.57	.24	:30	23	.17	0	:50	5	2.03	.24	:54	4	.57	.60
:45	15	.59	.08	:35	5	.19	.12	9:00	10	2.07	.24	:55	1	.60	1.80
5:00	15	.59	T	:40	5	.21	.24	:10	10	2.10	.18	:56	1	.65	3.00
:15	15	.60	.04	:45	5	.24	.36	:15	5	2.12	.24	2:00	4	.77	1.80
6:00	45	.60	0	:50	5	.30	.72	:30	15	2.13	.04	:02	2	.80	.90
:15	15	.62	.08	2:00	5	.34	.12	10:00	30	2.15	.04	:05	3	.82	.40
:30	15	.63	.04	:05	5	.36	.24	11:12	72	2.15	0	:10	5	.84	.24
:45	15	.66	.12	:10	5	.37	.12	:15	3	2.18	.60	:13	3	.88	.80
7:00	15	.68	.08	:20	10	.41	.24	:30	15	2.20	.08	:15	2	.91	.90
:15	15	.71	.12	:30	10	.48	.42	:35	5	2.21	.12	:19	4	.96	.75
:30	15	.72	.04	:35	5	.49	.12	:40	5	2.22	.12	:20	1	.99	1.80
8:55	85	.72	0	:40	5	.51	.30	p. m.				:23	3	1.00	.20
9:00	5	.75	.36	:45	5	.54	1.80	12:40	60	2.24	.02	:24	1	1.03	1.80
:15	15	.78	.12	:50	10	.63	.54	1:40	60	2.25	.01	:25	1	1.04	.60
:30	15	.86	.32	:55	5	.68	.36	2:40	60	2.26	.01	:30	5	1.05	.12
:45	15	.91	.20	3:00	10	.68	.30	3:05	25	2.26	0	:40	10	1.07	.12
10:00	15	.93	.08	:10	10	.72	.24	:10	5	2.38	1.44	:50	10	1.08	.06
11:00	60	.94	.01	:15	5	.74	.24	:20	10	2.40	.12	:10	10	1.10	.12
12:00	60	.95	.01	:20	5	.78	.48	:30	10	2.43	.12	:20	10	1.13	.18
p. m.				:30	10	.79	.06	:40	10	2.45	.12	:30	10	1.19	.36
12:15	15	1.01	.24	:40	10	.84	.30	:40	40	2.46	.02	:40	10	1.25	.36
:30	15	1.09	.32	:50	10	.87	.18	:40	30	2.48	.12	:50	10	1.28	.18
:45	15	1.13	.16					4:20	40	2.48	.12	:50	10	1.31	.18
1:00	15	1.18	.20					:30	30	2.48	.12	4:00	10	1.35	.24
:15	15	1.23	.20					:40	10	2.50	.12	:30	30	1.36	.02

TABLE 77.—Rainfall at station 107 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity				
STORM OF MAR. 27, 1938				STORM OF APR. 14-15, 1938				STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 17-18, 1939—Con.							
Mar. 27				Apr. 14				Apr. 15				May 17							
a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.				
12:32		0	0	11:50		0	0	3:00	30	1.83	0.02	7:10	10	0.01	0				
:35	3	.02	.40	:55	5	.02	.24	:05	5	1.84	.12	:20	10	.02	.06				
:40	5	.03	.12	:58	3	.03	.20	:10	5	1.86	.24	:30	10	.04	.12				
:45	5	.06	.36	12:00	2	.05	.60	:25	15	1.88	.08	:35	5	.08	.48				
:50	5	.09	.36					:40	15	1.91	.12	:37	2	.09	.30				
:53	3	.10	.12	Apr. 15				:45	5	1.95	.48	:40	3	.13	.80				
:58	5	.11	.20	a. m.				:55	10	1.95	0	:50	10	.19	.36				
1:00	2	.12	.30	12:03				4:00	5	1.96	.12	8:00	10	.23	.24				
:05	5	.13	.12	:05	3	.08	.60	:07	7	1.96	0	:10	10	.27	.24				
:20	15	.15	.08	:05	2	.11	.90	:08	1	1.97	.60	:20	10	.32	.30				
:35	15	.18	.12	:10	5	.17	.72	:48	40	1.97	0	:30	10	.34	.12				
:50	15	.19	.04	:13	3	.18	.20	:50	2	1.99	.60								
3:55	125	.19	0	:15	2	.21	.90	5:07	17	1.99	0	May 18							
:56	1	.20	.60	1:00	45	.24	.04	:10	3	2.01	.40	a. m.							
4:00	4	.21	.15	:15	15	.35	.44	:13	3	2.02	.20	6:54	624	.34	0				
6:05	125	.21	0	:20	5	.42	.84	:15	2	2.07	1.50	:55	1	.35	.60				
:10	5	.22	.12	:30	10	.48	.36	:20	5	2.11	.48	:58	3	.50	3.00				
:30	20	.22	0	:40	10	.49	.06	STORM OF MAY 16-17, 1939								7:00	2	.63	3.90
:40	10	.24	.12	:50	10	.52	.18									:02	2	.72	2.70
:50	10	.26	.12	2:00	10	.53	.06									:05	3	.97	5.00
7:00	10	.30	.24	3:28	88	.53	0									:07	2	1.09	3.60
:10	10	.33	.18	:30	2	.55	.60									:10	3	1.15	1.20
:20	10	.35	.12	:35	5	.62	.84									:11	1	1.18	1.80
:30	10	.36	.06	:40	5	.65	.36									:15	4	1.23	.75
:40	10	.38	.12	:45	5	.66	.12									:17	2	1.24	.30
:50	10	.40	.12	5:00	75	.67	.01									:20	3	1.31	1.40
8:00	10	.43	.18	6:00	60	.68	.01									:22	2	1.32	.37
:05	5	.43	0	7:00	60	.69	.01									:25	3	1.32	T
:08	3	.46	.60	8:00	60	.70	.01									:30	5	1.33	.12
:10	2	.51	1.50	:40	40	.70	0									:35	5	1.36	.36
:15	5	.54	.36	:45	5	.74	.48									8:30	55	1.36	0
:53	38	.54	0	:50	5	.75	.12									9:00	30	1.37	.02
:55	2	.57	.90	9:00	10	.78	.18									:30	30	1.38	.02
:58	3	.63	1.20	:05	5	.80	.24									STORM OF MAY 20, 1939			
9:00	2	.64	.30	:15	10	.82	.12												
:10	10	.65	.06	:20	5	.83	.12												
STORM OF MAR. 28, 1938				:25	5	.86	.36												
Mar. 28				:30	5	.93	.84												
p. m.				:30	10	1.00	.42												
3:40		0	0	:50	10	1.08	.48												
:42	2	.08	2.40	:00	10	1.13	.30												
:43	1	.22	8.40	:05	5	1.17	.48												
:44	1	.35	7.80	:08	3	1.20	.60												
:45	1	.44	8.40	:10	2	1.27	2.10												
:46	1	.56	4.20	:15	5	1.38	1.32												
:50	4	.62	.90	:20	5	1.40	.24												
:55	5	.63	.12	:25	5	1.42	.24												
4:05	10	.64	.06	:30	5	1.52	1.20												
:10	5	.65	.12	:35	5	1.54	.24												
:12	2	.66	.30	:50	15	1.56	.08												
:14	2	.70	1.20	:55	5	1.58	.24												
:15	1	.80	6.00	11:00	5	1.60	.24												
:16	1	.90	6.00	:05	5	1.62	.24												
:18	2	.98	2.40	:10	5	1.66	.48												
:20	2	1.00	.60	:30	20	1.69	.09												
5:20	60	1.00	0	12:00	30	1.72	.06												
:25	5	1.02	.24	p. m.															
6:30	65	1.02	0	12:30	30	1.75	.06												
:31	1	1.03	.60	1:00	30	1.76	.02												
:37	6	1.03	0	:30	30	1.77	.02												
:40	3	1.06	.60	:46	16	1.77	0												
				:48	2	1.79	.60												
				:50	2	1.79	0												
				:55	5	1.80	.09												
				2:30	35	1.82	.04												

TABLE 78.—Rainfall at station W-1 for selected storms, 1939—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 30, 1936			
May 17				May 17				May 18				May 20			
a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:45-----	5	0.98	0.12	7:30-----	5	0.10	0.36	6:57-----	2	0.82	5.40	1:05-----	5	0.23	1.20
:53-----	8	.98	0	:35-----	5	.15	.60	7:00-----	3	.86	.80	:10-----	5	.32	1.08
:55-----	2	1.00	.60	:36-----	1	.17	1.20	:05-----	5	.88	.24	:14-----	4	.37	.75
8:00-----	5	1.02	.24	:40-----	4	.19	.30	9:00-----	115	.88	0	:15-----	1	.41	2.40
:30-----	30	1.04	.04	:45-----	5	.22	.36	:30-----	30	.89	.02	:16-----	1	.44	1.80
:40-----	10	1.05	.06	:50-----	5	.25	.36	10:00-----	30	.90	.02	:20-----	4	.52	1.20
:45-----	5	1.06	.12	8:00-----	10	.30	.30	11:21-----	81	.91	.01	:25-----	5	.58	.72
STORM OF MAY 17-18, 1939				:10-----	10	.35	.30	STORM OF MAY 20, 1939				:30-----	5	.66	.96
May 17				:15-----	5	.38	.36	May 20				:35-----	5	.71	.60
p. m.				:20-----	5	.40	.24	a. m.				:38-----	3	.74	.60
6:45-----		0	0	:30-----	10	.41	.06	:40-----	2			:40-----	2	.75	.30
:50-----	5	.02	.24	:40-----	10	.42	.06	:45-----	5			:45-----	5	.77	.24
7:00-----	10	.03	.06	May 18				:50-----	5	.01	.30	:50-----	5	.80	.36
:15-----	15	.04	.04	a. m.				:55-----	5	.03	.60	:55-----	3	.84	.80
:25-----	10	.07	.18	6:48-----	608	.42	0	:50-----	5	.04	.20	:55-----	2	.85	.30
				:50-----	2	.43	.30	:55-----	5	.06	.24	2:00-----	5	.86	.12
				:51-----	1	.44	.60	:55-----	5	.08	.24	:05-----	5	.88	.24
				:55-----	4	.64	3.00	1:00-----	5	.13	.60	:08-----	3	.89	.20

TABLE 79.—Rainfall at station W-1a for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:24-----		0	0	7:18-----	8	0.90	0	7:27-----	2	0.10	0.30	12:40-----		0	0
:25-----	1	.02	1.20	:20-----	2	.92	.60	:30-----	3	.13	.60	:42-----	2	.03	.90
:30-----	5	.03	.12	:22-----	2	.94	.60	:35-----	5	.18	.60	:45-----	3	.04	.20
:35-----	5	.04	.12	:25-----	3	.95	.20	:37-----	2	.20	.60	:48-----	3	.06	.40
:40-----	5	.06	.24	:36-----	11	.95	0	:40-----	3	.23	.60	:50-----	2	.07	.30
:45-----	5	.08	.24	:40-----	4	.96	.15	:43-----	3	.24	.20	:55-----	5	.08	.12
:50-----	5	.09	.12	:45-----	5	.98	.24	:45-----	2	.25	.30	:56-----	1	.09	.60
May 17				:50-----	5	.98	0	:50-----	5	.28	.36	1:00-----	4	.13	.60
a. m.				:53-----	3	1.00	.40	:55-----	5	.32	.48	:05-----	5	.25	1.44
6:23-----	633	.09	0	:55-----	2	1.02	.60	8:00-----	5	.35	.36	:06-----	1	.28	1.80
:25-----	2	.12	.90	8:00-----	5	1.05	.36	:05-----	5	.38	.36	:10-----	4	.35	1.05
:29-----	4	.19	1.05	:40-----	40	1.05	0	:10-----	5	.40	.24	:14-----	4	.40	.75
:30-----	1	.23	2.40	:45-----	5	1.06	.12	:15-----	5	.43	.36	:15-----	1	.45	3.00
:34-----	4	.39	2.40	STORM OF MAY 17-18, 1939				:20-----	5	.44	.12	:20-----	5	.55	1.20
:35-----	1	.43	2.40	May 17				:25-----	5	.45	.12	:25-----	5	.62	.84
:40-----	5	.60	2.04	p. m.				:30-----	5	.46	.12	:30-----	5	.69	.84
:41-----	1	.65	3.00	6:45-----		0	0	May 18				:35-----	5	.75	.72
:45-----	4	.74	1.35	:50-----	5	.02	.24	a. m.				:40-----	5	.80	.60
:46-----	1	.77	1.80	:50-----	10	.03	.12	6:48-----	618	.46	0	:42-----	2	.82	.60
:50-----	4	.81	.60	:05-----	5	.04	.12	:50-----	2	.50	1.20	:45-----	3	.83	.20
:54-----	4	.84	.45	:10-----	5	.05	.12	:52-----	2	.55	1.50	:50-----	5	.84	.12
:55-----	1	.85	.60	:15-----	5	.06	.12	:55-----	3	.70	3.00	:52-----	2	.86	.60
:56-----	1	.87	1.20	:20-----	5	.08	.24	:56-----	1	.76	3.60	:55-----	3	.88	.40
7:00-----	4	.88	.15	:25-----	5	.09	.12	:58-----	2	.77	.30	2:00-----	5	.89	.12
:05-----	5	.89	.12					:50-----	2	.81	1.20	:03-----	3	.90	.20
:10-----	5	.90	.12					:05-----	5	.82	.12	:05-----	2	.91	.30

TABLE 80.—Rainfall at station W-2 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 16-17, 1939—Con.			
May 16				May 17				May 17				May 17			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:20-----		0	0	6:22-----	632	0.09	0	6:40-----	5	0.41	1.68	6:57-----	2	0.89	1.20
:30-----	10	.05	.30	:25-----	3	.14	1.00	:45-----	5	.63	1.44	7:00-----	3	.90	.20
:40-----	10	.07	.12	:30-----	5	.25	1.32	:50-----	5	.75	1.44	:05-----	5	.91	.12
:50-----	10	.09	.12	:35-----	5	.37	1.44	:55-----	5	.85	1.20	:10-----	5	.92	.12

TABLE 80.—Rainfall at station W-2 for selected storms, 1939—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 17				May 17				May 18				May 20			
a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:20-----	10	0.92	0	7:00-----	15	0.03	.04	6:55-----	5	0.73	1.92	1:10-----	5	0.35	1.20
:23-----	3	.99	1.40	:15-----	15	.06	.12	:58-----	3	.81	1.60	:12-----	2	.36	.30
:25-----	2	1.00	.30	:20-----	5	.08	.24	7:00-----	2	.82	.30	:14-----	2	.43	2.10
:40-----	15	1.00	0	:25-----	5	.10	.24					:15-----	1	.45	1.20
:45-----	5	1.02	.24	:30-----	5	.14	.48	STORM OF MAY 20, 1939				:20-----	5	.55	1.20
:50-----	5	1.02	T	:34-----	4	.18	.60					:25-----	5	.62	.84
:54-----	4	1.03	.15	:35-----	1	.19	.60					:30-----	5	.69	.84
:55-----	1	1.05	1.20	:40-----	5	.22	.36					:35-----	5	.75	.72
11:00-----	185	1.05	0	:50-----	10	.28	.36					:40-----	5	.78	.36
12:00-----	60	1.06	.01	8:00-----	10	.33	.30					:45-----	5	.80	.24
p. m.				:10-----	10	.39	.36	May 20				:50-----	5	.83	.36
1:00-----	60	1.07	.01	:20-----	10	.43	.24	a. m.				:55-----	5	.89	.72
STORM OF MAY 17-18, 1939				:30-----	10	.44	.06	12:38-----		0	0	2:00-----	5	.90	.12
May 17				May 18				:40-----	2	.01	.30	:03-----	3	.90	0
p. m.				a. m.				:45-----	5	.03	.24	:05-----	2	.92	.60
6:30-----		0	0	6:46-----	616	.44	0	:50-----	5	.05	.24	:10-----	5	.93	.12
:45-----	15	.02	.08	:50-----	4	.57	1.95	:55-----	5	.08	.36				
								1:00-----	5	.14	.72				
								:05-----	5	.25	1.32				

TABLE 81.—Rainfall at station W-2a for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:20-----		0	0	7:24-----	3	1.00	1.20	7:27-----	2	0.06	T	3:29-----		0	0
:25-----	5	.02	.24	:25-----	1	1.01	.60	:30-----	3	.08	.24	:40-----	1	.01	.60
:30-----	5	.04	.24	:30-----	5	1.02	.12	:35-----	5	.15	.84	:43-----	3	.02	.20
:40-----	10	.06	.12	:40-----	10	1.02	0	:37-----	2	.18	.90	:48-----	5	.04	.24
:50-----	10	.08	.12	:45-----	5	1.05	.36	:40-----	3	.20	.40	:53-----	5	.07	.36
				:53-----	8	1.05	0	:45-----	5	.21	.12	:58-----	5	.11	.48
May 17				:55-----	2	1.06	.30	:50-----	5	.25	.48	1:00-----	2	.14	.90
a. m.				8:00-----	5	1.08	.24	8:00-----	10	.31	.36	:03-----	3	.21	1.40
6:23-----	633	.08	0	:15-----	15	1.09	.04	:10-----	10	.35	.24	:08-----	5	.33	1.44
:25-----	2	.13	1.50	12:00-----	225	1.09	0	:20-----	10	.41	.36	:10-----	2	.37	1.20
:30-----	5	.27	1.68					:30-----	10	.42	.06	:12-----	2	.38	.30
:31-----	1	.30	1.80	p. m.				May 18				:13-----	1	.42	2.40
:35-----	4	.50	3.00	12:30-----	30	1.10	.02	a. m.				:15-----	2	.48	1.80
:39-----	4	.67	2.55	1:00-----	30	1.10	0	6:49-----	619	.42	0	:18-----	3	.52	.80
:40-----	1	.68	.60	:30-----	30	1.11	.02	:50-----	1	.44	1.20	:23-----	5	.60	.96
:45-----	5	.73	.60	STORM OF MAY 17-18, 1939				:53-----	3	.50	1.20	:23-----	5	.68	.96
:46-----	1	.75	1.20	May 17				:55-----	2	.59	2.70	:33-----	5	.73	.60
:49-----	3	.81	1.20	p. m.				:56-----	1	.68	5.40	:38-----	5	.77	.48
:50-----	1	.82	.60	7:00-----				:57-----	1	.76	4.80	:43-----	5	.79	.24
:55-----	5	.87	.60					:59-----	2	.88	3.60	:48-----	5	.81	.24
:56-----	1	.88	.60	6:45-----		0	0	7:00-----	1	.89	.60	:53-----	5	.88	.84
:58-----	2	.91	.90	:15-----	15	.01	.04	:05-----	5	.91	.24	:58-----	5	.89	.12
7:00-----	2	.92	.30	:20-----	5	.03	.08	:10-----	5	.92	.12	2:03-----	5	.89	0
:10-----	10	.94	.12	:25-----	5	.05	.24	:30-----	20	.92	0	:04-----	1	.92	1.80
:21-----	11	.94	0					:45-----	15	.93	.04	:28-----	24	.92	0
												:58-----	30	.93	.02

TABLE 82.—Rainfall at station W-3 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 16-17, 1939—Con.			
May 16				May 17				May 17				May 17			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:22-----		0	0	6:23-----	633	0.10	0	6:45-----	5	0.70	0.60	7:24-----	4	0.97	0.90
:24-----	2	.02	.60	:25-----	2	.14	1.20	:50-----	5	.78	.96	:25-----	1	.98	.60
:25-----	1	.03	.60	:30-----	5	.28	1.68	:55-----	5	.82	.48	:30-----	5	.99	.12
:30-----	5	.05	.24	:32-----	2	.33	1.50	:59-----	4	.87	.75	:40-----	10	1.00	.06
:35-----	5	.07	.24	:35-----	3	.46	2.60	7:00-----	1	.88	.60	:45-----	5	1.01	.12
:40-----	5	.08	.12	:39-----	4	.64	2.70	:10-----	10	.90	.12	:50-----	5	1.02	.12
:50-----	10	.10	.12	:40-----	1	.65	.60	:20-----	10	.91	.06	:55-----	5	1.03	.12

TABLE 82.—Rainfall at station W-3 for selected storms, 1939—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 17				May 17				May 18				May 20			
a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
8:00-----	5	1.05	0.24	7:28-----	3	0.09	0.20	6:54-----	2	0.51	1.50	12:54-----	4	0.10	0.45
:35-----	35	1.05	0	:30-----	2	.10	.30	:55-----	1	.55	2.40	:55-----	1	.11	.60
:45-----	10	1.06	.06	:35-----	5	.16	.72	:59-----	4	.85	4.50	:58-----	3	.12	.20
STORM OF MAY 17-18, 1939				:40-----	5	.21	.60	7:00-----	1	.87	.12	1:00-----	2	.16	1.20
May 17				:42-----	2	.22	.30	:02-----	2	.89	.60	:05-----	5	.26	1.20
p. m.				:45-----	3	.23	.20	:05-----	3	.91	.40	:09-----	4	.36	1.50
6:45-----		0	0	:50-----	5	.26	.36	:08-----	3	.94	.60	:10-----	1	.38	.60
:50-----	5	.01	.12	:55-----	5	.29	.36	:10-----	2	.95	.30	:14-----	4	.45	1.05
:55-----	5	.02	.12	8:00-----	5	.31	.24	:15-----	5	.96	.12	:15-----	1	.46	.60
7:00-----	5	.03	.12	:05-----	5	.35	.48	STORM OF MAY 20, 1939				:20-----	5	.55	1.08
:05-----	5	.04	.12	:10-----	5	.36	.12	May 20				:25-----	5	.64	1.08
:10-----	5	.05	.12	:15-----	5	.39	.36	a. m.				:30-----	5	.71	.84
:15-----	5	.06	.12	:20-----	5	.41	.24	12:40-----		0	0	:35-----	5	.75	.48
:20-----	5	.07	.12	:25-----	5	.43	.24	:44-----	4	.05	.75	:38-----	3	.80	1.00
:25-----	5	.08	.12	:30-----	5	.44	.12	:45-----	1	.06	.60	:40-----	2	.82	.60
				May 18				:50-----	5	.07	.12	:45-----	5	.84	.24
				a. m.								:50-----	5	.87	.36
				6:50-----	620	.44	0					:55-----	5	.93	.72
				:52-----	2	.46	.60					2:00-----	5	.96	.36

TABLE 83.—Rainfall at station W-3a for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939			
May 16				May 17				May 17				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:21-----		0	0	7:20-----	5	0.97	0.12	7:30-----	5	0.10	0.48	12:35-----		0	0
:25-----	4	.04	.60	:25-----	5	1.05	.96	:34-----	4	.13	.45	:40-----	5	.02	.24
:30-----	5	.05	.12	:30-----	5	1.06	.12	:35-----	1	.15	1.20	:45-----	5	.03	.12
:35-----	5	.06	.12	:40-----	10	1.06	0	:40-----	5	.20	.60	:50-----	5	.06	.36
:40-----	5	.07	.12	:45-----	5	1.08	.24	:45-----	5	.22	.24	:55-----	5	.07	.12
:45-----	5	.09	.24	:50-----	5	1.08	T	:50-----	5	.24	.24	1:00-----	5	.13	.72
May 17				:53-----	3	1.09	.20	8:00-----	10	.30	.36	:05-----	5	.25	1.44
a. m.				:55-----	2	1.11	.60	:10-----	10	.34	.24	:07-----	2	.30	1.50
6:23-----	638	.09	0	8:00-----	5	1.12	.12	:20-----	10	.40	.36	:08-----	1	.32	1.20
:25-----	2	.11	.60	10:00-----	120	1.12	0	:30-----	10	.42	.12	:10-----	2	.35	.90
:30-----	5	.22	1.32	11:00-----	60	1.13	.01	STORM OF MAY 17-18, 1939				:12-----	2	.37	.60
:35-----	5	.33	1.32	12:00-----	60	1.14	.01	May 18				:14-----	2	.43	1.80
:40-----	5	.44	1.32	STORM OF MAY 17-18, 1939				a. m.				:15-----	1	.45	1.20
:45-----	5	.55	1.32	May 17				6:50-----	620	.42	0	:17-----	2	.49	1.20
:50-----	5	.66	1.32	p. m.				:51-----	1	.48	3.60	:18-----	1	.52	1.80
:55-----	5	.76	1.20	6:45-----	15	.01	.04	:53-----	2	.53	1.50	:20-----	2	.55	.90
:59-----	4	.83	1.05	7:00-----	15	.03	.68	:55-----	2	.61	2.40	:25-----	5	.63	.96
7:00-----	1	.87	2.40	:15-----	5	.05	.24	:56-----	1	.70	5.40	:30-----	5	.71	.96
:01-----	1	.88	.60	:20-----	5	.06	.12	:57-----	1	.73	1.80	:35-----	5	.78	.84
:04-----	3	.94	1.20	:25-----	5	.06	.12	:58-----	1	.81	4.80	:40-----	5	.81	.36
:05-----	1	.95	.60					7:00-----	2	.84	.90	:45-----	5	.83	.24
:10-----	5	.96	.12					:10-----	10	.85	.06	:50-----	5	.87	.48
:15-----	5	.96	T									:55-----	5	.92	.60

TABLE 84.—Rainfall at station W-4 for selected storms, 1937-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF DEC. 22, 1937				STORM OF DEC. 22, 1937—Con.				STORM OF DEC. 22, 1937—Con.				STORM OF DEC. 22, 1937—Con.			
Dec. 22				Dec. 22				Dec. 22				Dec. 22			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
1:20-----		0	0	3:00-----	10	0.15	0.18	4:15-----	5	0.46	0.48	6:30-----	10	0.55	0.06
:50-----	30	0.01	0.02	:10-----	10	.17	.12	:20-----	5	.47	.12	:40-----	10	.57	.12
2:00-----	10	.02	.06	:20-----	10	.18	.06	:30-----	10	.49	.12	:50-----	10	.58	.06
:10-----	10	.05	.18	:30-----	10	.20	.12	5:00-----	30	.49	0	:50-----	10	.60	.12
:20-----	10	.07	.12	:40-----	10	.24	.24	:30-----	30	.50	.02	7:00-----	30	.62	.04
:30-----	10	.10	.18	:50-----	10	.30	.36	6:00-----	30	.51	.02	:30-----	30	.63	.02
:45-----	15	.11	.04	4:00-----	10	.36	.36	:10-----	10	.53	.12	8:00-----	30	.63	0
:50-----	5	.12	.12	:10-----	10	.42	.36	:20-----	10	.54	.06	:45-----	5	.65	.24

TABLE 84.—Rainfall at station W-4 for selected storms, 1937-39—Continued

[illegible]

TABLE 84.—Rainfall at station W-4 for selected storms, 1937-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939				STORM OF MAY 20, 1939			
Apr. 15				May 16				May 17				May 20			
p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
12:35	15	1.75	0.04	7:30	5	0.06	0.24	6:50				12:40			
:50	15	1.76	.04	:40	10	.09	.18	7:00	10	.02	.12	:45	5	.04	.48
1:25	35	1.76	0	:50	10	.11	.12	:10	10	.04	.12	:50	5	.06	.24
:55	30	1.78	.04					:15	5	.05	.12	:55	5	.08	.24
2:20	25	1.78	0	May 17				:20	5	.08	.36	:58	3	.10	.40
:25	5	1.79	.12	a. m.				:25	5	.09	.12	1:00	2	.13	.90
:35	10	1.81	.12	6:23	633	.11	0	:30	5	.13	.48	:04	4	.23	1.50
:40	5	1.84	.36	:25	2	.13	.60	:35	5	.18	.60	:05	1	.25	1.20
3:02	82	1.84	0	:26	1	.14	.60	:40	5	.22	.48	:10	5	.33	.96
:05	3	1.94	2.00	:29	3	.19	1.00	:45	5	.23	.12	:11	1	.34	.60
:07	2	2.02	2.40	:30	1	.22	1.80	:50	5	.27	.48	:13	2	.41	2.10
:10	3	2.06	.80	:32	2	.34	3.60	:55	5	.30	.36	:15	2	.46	1.50
:15	5	2.07	.12	:34	2	.45	3.30	8:00	5	.32	.24	:20	5	.56	1.20
:20	5	2.12	.60	:35	1	.49	2.40	:05	5	.33	.12	:25	5	.63	.84
:25	5	2.14	.24	:38	3	.59	2.00	:10	5	.35	.24	:30	5	.71	.96
:30	5	2.15	.12	:40	2	.62	.90	:15	5	.39	.48	:35	5	.77	.76
:45	15	2.17	.08	:46	1	.69	.60	:20	5	.42	.36	:40	5	.81	.48
:50	5	2.19	.24	:48	2	.77	2.40	:30	10	.43	.06	:45	5	.83	.24
:55	5	2.20	.12	:50	2	.79	.60					:47	2	.84	0
5:14	79	2.20	0	:55	5	.83	.48	May 18				:50	3	.87	.60
:15	1	2.21	.60	:56	1	.84	.60	a. m.				:55	5	.91	.48
:16	1	2.23	1.20	:58	2	.87	.90	6:48	618	.43	0	:57	3	.92	.12
:20	4	2.23	0	7:00	2	.89	.60	:50	2	.45	.60	:02	2	.92	0
:22	2	2.24	.30	:10	10	.91	.12	:51	1	.47	1.20	:05	3	.95	.36
:30	8	2.25	.08	:20	10	.91	0	:53	2	.57	3.00	:08	3	.96	.20
STORM OF MAY 16-17, 1939				:21	1	.92	.60	:55	2	.65	2.40	:10	5	.97	.12
May 16				:25	4	.99	1.05	:56	1	.71	3.60				
p. m.				:30	5	1.00	.12	:58	2	.80	2.70				
7:22		0	0	:40	10	1.01	.06	7:00	2	.81	.30				
:25	3	.04	.80	:50	10	1.03	.12	:10	10	.82	.06				
				8:00	10	1.05	.12								

TABLE 85.—Rainfall at station W-4a for selected storms, 1938-39

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF APR. 14-15, 1938				STORM OF APR. 14-15, 1938—Con.				STORM OF APR. 14-15, 1938—Con.				STORM OF MAY 16-17, 1939—Con.			
Apr. 14				Apr. 15				Apr. 15				May 17			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
11:50		0	0	9:15	5	0.68	0.24	2:45	15	1.76	0.08	6:40	2	0.56	0.60
:55	5	.01	.12	:20	5	.71	.36	:55	10	1.76	0	:45	5	.62	.72
12:00	5	.05	.48	:25	5	.74	.36	3:00	5	1.92	1.92	:48	3	.69	1.40
Apr. 15				:30	5	.83	1.08	:05	5	1.93	.12	:50	2	.71	.60
a. m.				:35	5	.86	.36	:08	3	1.94	.20	:55	5	.75	.48
12:02	2	.09	1.20	:40	5	.89	.36	:10	2	1.98	1.20	:57	2	.79	1.20
:05	3	.10	.20	:45	5	.94	.60	:12	2	2.00	.60	7:00	3	.81	.40
:10	5	.12	.24	:50	5	.96	.24	:15	3	2.01	.20	:05	5	.83	.24
:15	5	.13	.12	:55	5	.98	.24	:20	5	2.02	.12	:10	5	.84	.12
:20	5	.14	.12	10:00	5	1.00	.24	:30	10	2.02	0	:15	5	.84	T
:30	10	.14	0	:05	5	1.04	.48	:40	10	2.04	.12	:20	5	.85	.12
:40	10	.15	.06	:10	5	1.14	1.20	:45	5	2.06	.24	:21	1	.85	T
:50	10	.16	.06	:15	5	1.32	2.16	:50	5	2.07	.12	:22	1	.89	2.40
1:00	10	.17	.06	:20	5	1.33	.12	5:05	75	2.07	0	:25	3	.92	.60
:05	5	.21	.48	:25	5	1.35	.24	:10	5	2.10	.36	:30	5	.93	.12
:10	5	.25	.48	:30	5	1.46	1.32	:15	5	2.12	.24	:40	10	.95	.12
:15	5	.30	.60	:35	5	1.48	.24	:20	5	2.14	.24	:50	10	.97	.12
:20	5	.34	.48	:40	5	1.50	.24	STORM OF MAY 16-17, 1939				:55	5	.98	.12
:25	5	.35	.12	:45	5	1.51	.12					8:00	5	.99	.12
:30	5	.37	.24	:50	5	1.52	.12					:30	30	.99	0
:45	15	.40	.12	:55	5	1.53	.12					9:00	30	1.00	.02
2:00	15	.42	.08	11:00	5	1.55	.24					11:00	120	1.00	0
3:00	60	.42	0	:05	5	1.57	.24					12:00	60	1.01	.01
:05	5	.44	.24	:10	5	1.60	.36					STORM OF MAY 17-18, 1939			
:32	27	.44	0	:15	5	1.61	.12					p. m.			
:35	3	.51	1.40	:20	5	1.63	.24					1:00	60	1.02	.01
:40	5	.54	.36	:25	5	1.64	.12								
:45	5	.55	.12	:30	5	1.65	.12								
:50	5	.56	.12	:40	5	1.66	.12								
6:00	130	.56	0	12:00	20	1.66	0								
7:00	60	.57	.01												
8:00	60	.58	.01												
:40	40	.58	0												
:45	5	.59	.12												
:50	5	.60	.12												
:55	5	.61	.12												
9:00	5	.62	.12												
:05	5	.65	.36												
:10	5	.66	.12												

TABLE 85.—Rainfall at station W-4a for selected storms, 1938-39—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939				STORM OF MAY 20, 1939—Con.			
May 17				May 18				May 20				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:40-----	5	0.20	0.60	6:50-----	610	0.41	0	12:45-----		0	0	1:20-----	4	0.50	1.20
:45-----	5	.22	.24	:51-----	1	.45	2.40	:50-----	5	.03	.36	:25-----	5	.58	.96
:50-----	5	.25	.36	:52-----	1	.49	2.40	:55-----	5	.04	.12	:30-----	5	.67	1.08
8:00-----	10	.28	.18	:53-----	2	.58	5.40	1:00-----	5	.08	.48	:35-----	5	.75	.96
:10-----	10	.33	.30	:55-----	2	.63	1.50	:04-----	4	.12	.60	:40-----	5	.82	.84
:20-----	10	.39	.36	:58-----	3	.83	4.00	:05-----	1	.16	2.40	:45-----	5	.85	.36
:30-----	10	.40	.06	7:00-----	2	.83	T	:08-----	3	.22	1.20	:50-----	5	.89	.48
:40-----	10	.41	.03	:05-----	5	.84	.12	:10-----	2	.26	1.20	:55-----	5	.96	.84
				:30-----	25	.84	0	:14-----	4	.31	.75	2:00-----	5	.99	.36
				:45-----	15	.85	.04	:15-----	1	.38	4.20	:06-----	6	.99	0
								:16-----	1	.42	2.40	:10-----	4	1.02	.45

TABLE 86.—Rainfall at station W-5 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 16				May 17				May 17				May 20			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:18-----		0		7:30-----	5	1.05	0.12	8:20-----	10	0.40	0.36	12:40-----	2	0.01	0.30
:20-----	2	.03	0.90	:40-----	10	1.06	.06	:25-----	5	.42	.24	:45-----	5	.03	.24
:25-----	5	.06	.36	:45-----	5	1.08	.24	:40-----	15	.43	.04	:50-----	5	.07	.48
:30-----	5	.08	.24	:50-----	5	1.09	.12					:52-----	2	.08	.30
:40-----	10	.10	.12	:55-----	5	1.10	.12	May 18				:55-----	3	.09	.20
:50-----	10	.13	.18	8:45-----	50	1.11	.01	a. m.				1:00-----	5	.14	.60
May 17								6:50-----	610	.43	0	:01-----	1	.15	.60
a. m.				STORM OF MAY 17-18, 1939				:52-----	2	.48	1.50	:05-----	4	.25	1.50
6:25-----	635	.13	0	May 17				:55-----	3	.63	3.00	:07-----	2	.30	1.50
:30-----	5	.25	1.44	p. m.				:57-----	2	.78	4.50	:10-----	3	.35	1.00
:35-----	5	.50	3.00	6:45-----		0	0	:00-----	3	.83	1.00	:15-----	5	.44	1.08
:38-----	3	.67	3.40	7:00-----	15	.02	.08	:10-----	10	.84	.06	:20-----	5	.53	1.08
:40-----	2	.70	.90	:15-----	15	.04	.08	:30-----	20	.84	0	:30-----	10	.69	.96
:45-----	5	.75	.60	:30-----	15	.10	.24	:50-----	20	.85	.03	:35-----	5	.75	.72
:48-----	3	.80	1.00	:35-----	5	.15	.60	:55-----	5	.86	.12	:40-----	5	.80	.60
:49-----	1	.82	1.20	:38-----	3	.19	.80					:45-----	5	.82	.24
:50-----	1	.83	.60	:40-----	2	.20	.30	STORM OF MAY 20, 1939				:50-----	5	.85	.36
:55-----	5	.88	.60	:45-----	5	.23	.36	May 20				:55-----	5	.91	.72
7:00-----	5	.93	.60	:50-----	5	.25	.24	a. m.				2:00-----	5	.92	.12
:05-----	5	.95	.24	8:00-----	10	.31	.36	6:50-----		0	0	:05-----	5	.92	0
:10-----	5	.96	.12	:10-----	10	.34	.18					:06-----	1	.94	1.20
:21-----	11	.96	0									:08-----	2	.95	.30
:25-----	4	1.04	1.20												

TABLE 87.—Rainfall at Station W-6 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.			
May 16				May 17				May 17				May 17			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
7:14-----		0		6:36-----	1	0.58	1.20	8:00-----	10	1.07	0.06	8:00-----	10	0.30	0.24
:15-----	1	.01	.60	:37-----	1	.62	2.40	:30-----	30	1.08	.02	:10-----	10	.34	.24
:20-----	5	.08	.84	:45-----	5	.71	.60	9:00-----	30	1.10	.04	:20-----	10	.42	.48
:25-----	5	.12	.48	:47-----	2	.76	1.50					:30-----	10	.44	.12
:30-----	5	.13	.12	:50-----	3	.79	.60	STORM OF MAY 17-18, 1939				:45-----	15	.46	.08
:35-----	5	.15	.24	:55-----	5	.83	.48	May 17							
:40-----	5	.17	.24	7:00-----	5	.89	.72	a. m.				May 18			
:45-----	5	.19	.24	:05-----	5	.90	.12	6:49-----	504	.46	0	6:49-----	504	.46	0
May 17				:10-----	5	.94	.48	6:50-----		0	0	:50-----	1	.47	.60
a. m.				:15-----	5	.94	T	7:00-----	10	.01	.06	:55-----	5	.60	1.56
6:26-----	641	.19	0	:20-----	5	.95	.12	:10-----	10	.03	.12	7:00-----	5	.70	1.20
:29-----	3	.27	1.60	:21-----	1	.95	T	:20-----	10	.06	.18	:01-----	1	.75	3.00
:30-----	1	.32	3.00	:24-----	3	1.01	1.20	:30-----	10	.11	.30	:04-----	3	.80	1.00
:32-----	2	.39	2.10	:25-----	1	1.02	.60	:40-----	10	.20	.54	:05-----	1	.80	T
:33-----	1	.48	5.40	:30-----	5	1.03	.12	:50-----	10	.26	.36	:10-----	5	.81	.12
:35-----	2	.56	2.40	:40-----	10	1.04	.06								
				:50-----	10	1.06	.12								

TABLE 87.—Rainfall at Station W-6 for selected storms, 1939—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 20, 1939				STORM OF MAY 20, 1939—Con.				STORM OF MAY 20, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 20				May 20				May 20				May 20			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
12:40		0	0	1:05	3	0.20	1.40	1:20	4	0.54	1.20	1:45	5	0.88	0.36
:45	5	.02	.24	:08	3	.28	1.60	:25	5	.63	1.08	:50	5	.92	.48
:50	5	.05	.36	:10	2	.31	.90	:30	5	.71	.96	:55	5	1.01	1.08
:55	5	.07	.24	:13	3	.35	.80	:35	5	.79	.96	2:00	5	1.04	.36
1:00	5	.11	.48	:15	2	.44	2.70	:40	5	.85	.72	:10	10	1.05	.06
:02	2	.13	.60	:16	1	.46	1.20								

TABLE 88.—Rainfall at station W-7 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 16				May 17				May 17				May 20			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
7:15		0	0	8:00	15	1.05	0.16	8:00	10	0.31	0.36	12:45	2	0.03	0.30
:30	15	.06	.24	:30	30	1.05	0	:10	10	.35	.24	:48	3	.04	.20
:45	15	.10	.16	9:00	30	1.06	.02	:13	3	.36	.20	:50	2	.06	.60
:50	5	.11	.12	12:00	180	1.06	0	:15	2	.38	.60	:54	4	.10	.60
May 17				p. m.				:20	5	.42	.48	:55	1	.10	T
a. m.				1:00	60	1.07	.01	:30	10	.44	.12	:57	2	.11	.30
6:26	636	.11	0	2:00	60	1.08	.01	:40	10	.45	.06	1:00	3	.13	.40
:29	3	.21	2.00	STORM OF MAY 17-18, 1939				May 18				:03	3	.17	.80
:30	1	.23	1.20	May 17				a. m.				:05	2	.24	2.10
:35	5	.47	2.76	p. m.				6:51	611	.45	0	:08	3	.35	2.20
:36	1	.52	3.00	6:50	10	.02	.12	:53	2	.49	1.20	:10	2	.38	.90
:37	1	.57	3.00	:10	10	.03	.06	:55	2	.59	3.00	:15	5	.46	.96
:39	2	.62	1.50	:20	10	.06	.18	:58	3	.76	3.40	:18	3	.54	1.60
:40	1	.63	.60	:30	10	.10	.24	7:00	2	.91	4.50	:20	2	.57	.90
:45	5	.68	.60	:35	5	.14	.48	:15	15	.94	.12	:25	5	.65	.96
:47	2	.70	.60	:40	5	.20	.72	STORM OF MAY 20, 1939				:30	5	.73	.96
:50	3	.76	1.20	:43	3	.22	.40	May 20				:35	5	.80	.84
:55	5	.80	.48	:45	2	.23	.30	a. m.				:40	5	.85	.60
:58	3	.84	.80	:48	3	.23	T	12:38		0	0	:45	5	.88	.36
7:00	2	.86	.60	:50	2	.25	.60	:40	2	.01	.30	:50	5	.92	.48
:10	10	.89	.18					:43	3	.02	.20	:51	1	.94	1.20
:20	10	.90	.06					May 20				:55	4	1.00	.90
:22	2	.93	.90					a. m.				:58	3	1.03	.60
:25	3	.98	1.00					:40	2	.01	.30	2:00	2	1.04	.30
:30	5	.99	.12					:43	3	.02	.20	:05	5	1.04	0
:45	15	1.01	.08									:07	2	1.05	.30
												:10	3	1.06	.20

TABLE 89.—Rainfall at station W-9 for selected storms, 1939

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 16-17, 1939				STORM OF MAY 16-17, 1939—Con.				STORM OF MAY 17-18, 1939				STORM OF MAY 17-18, 1939—Con.			
May 16				May 17				May 17				May 17			
p. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.	p. m.	Min.	In.	In. per hr.
7:25		0	0	6:48	3	0.71	0.80	7:00	10	.01	.06	8:30	5	0.41	0.12
:30	5	.01	.12	:50	2	.76	1.50	:18	8	.02	.08	:40	10	.42	.06
:35	5	.03	.24	:55	5	.80	.48	:20	2	.03	.30				
:40	5	.04	.12	:58	3	.83	.60	:23	3	.04	.20	May 18			
:45	5	.05	.12	7:00	2	.87	1.20	:25	2	.05	.30	a. m.			
:50	5	.06	.12	:02	2	.88	.30	:30	5	.06	.12	6:51	611	.42	0
May 17				:05	3	.89	.20	:35	5	.11	.60	:53	2	.45	.90
a. m.				:08	3	.90	.20	:40	5	.15	.48	:54	1	.46	.60
6:25	635	.06	0	:10	2	.91	.30	:45	5	.19	.30	:55	1	.49	1.80
:29	4	.16	1.50	:15	5	.92	.12	:58	5	.25	.48	:56	1	.54	3.00
:30	1	.18	1.20	:22	7	.92	0	8:00	5	.28	.36	:58	2	.66	3.60
:31	1	.20	1.20	:25	3	.93	1.20	:05	5	.30	.24	7:00	2	.78	3.60
:33	2	.29	2.70	:28	3	1.01	.60	:10	5	.32	.24	:02	2	.83	1.50
:35	2	.40	3.30	:32	4	1.01	0	:15	5	.35	.36	:05	3	.85	.40
:38	3	.54	2.80	:35	3	1.02	.20	:20	5	.39	.48	:10	5	.88	.36
:39	1	.59	3.00	:45	10	1.02	0	:25	5	.40	.12	:20	10	.88	0
:40	1	.61	1.20	:50	5	1.03	.12					:25	5	.89	.12
:42	2	.65	1.20	:55	5	1.04	.12								
:45	3	.67	.40	8:00	5	1.05	.12								
				:10	10	1.06	.06								

TABLE 89.—Rainfall at station W-9 for selected storms, 1939—Continued

Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity	Date and time	Time interval	Accumulated depth	Intensity
STORM OF MAY 20, 1939				STORM OF MAY 20, 1939—Con.				STORM OF MAY 20, 1939—Con.				STORM OF MAY 20, 1939—Con.			
May 20				May 20				May 20				May 20			
a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.	a. m.	Min.	In.	In. per hr.
12:35-----	5	0	0	12:58-----	3	0.16	0.60	1:15-----	2	0.56	0.90	1:48-----	3	0.96	0.40
:40-----	5	.01	.12	1:00-----	2	.18	.60	:17-----	2	.61	1.50	:50-----	2	.99	.90
:45-----	5	.03	.24	:02-----	2	.21	.90	:20-----	3	.65	.80	:53-----	3	1.04	1.00
:46-----	1	.04	.60	:05-----	3	.33	2.40	:25-----	5	.73	.96	:55-----	2	1.06	.60
:50-----	4	.08	.60	:07-----	2	.41	2.40	:30-----	5	.80	.84	2:00-----	5	1.08	.24
:52-----	2	.10	.60	:08-----	1	.45	2.40	:35-----	5	.87	.84	:04-----	4	1.08	0
:54-----	2	.13	.90	:10-----	2	.48	.90	:40-----	5	.92	.60	:05-----	1	1.09	.60
:55-----	1	.13	0	:13-----	3	.53	1.00	:45-----	5	.94	.24	:08-----	3	1.11	.40



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